

Industrial/Commercial Water Consumption From Public Water Supply Systems

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The objective of this report was to determine how water distributed by public water suppliers in the State of Rhode Island was used. Information regarding water consumption by non-residential firms and establishments was provided by 23 of the 25 largest water supply systems in the State. The non-residential water users were broken down into either the manufacturing or non-manufacturing category, then classified within the manufacturing category according to Standard Industrial Codes (SIC) and seven distinct classifications for the non-manufacturing category. The seven classifications are agriculture, construction, wholesale and retail trade, utilities, services, governmental, and institutional.

A total of 6,514 firms and establishments were included in this study. Manufacturing firms deriving their water supply from public water supply systems totalled 926. These firms had a consumption of slightly above 3.10 billion gallons during a twelve month period, representing an average daily demand of 8.51 MGD. The largest consumption by manufacturing classifications were by SIC Group 22, textile mill products; SIC Group 39, jewelry, jewelry findings, silverware, and related items; SIC Group 34, fabricated metal products; and SIC Group 28, chemical and allied products. These four industry groups accounted for about 58 percent of the total consumption by manufacturing firms.

Non-manufacturing firms and establishments included in this study numbered 5,550. The total consumption by these firms was approximately 2.26 billion gallons during the same period, an average daily demand of 6.18 MGD. Of the seven non-manufacturing classifications, four had relatively similar consumption amounts. These groups, wholesale and retail trade, services, governmental, and institutional, accounted for approximately 93 percent of the non-manufacturing consumption. During the study, it was found that manufacturing firms accounted for about 58 percent of the total non-residential consumption while non-manufacturing establishments consumed the remaining 42 percent.

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I. Purpose and Authority

The State of Rhode Island, through the State-wide Planning Program in the Department of Administration, requested assistance from the New England Division, Corps of Engineers to determine how the water distributed by public water supply systems in the State is used by non-residential consumers. The purpose of this report is to provide the State with a breakdown of water consumption by Standard Industrial Codes for manufacturing firms and into seven categories for non-manufacturing establishments.

Authority for the Corps of Engineers' participation in this effort is contained in Section 22 of the Water Resources Development Act of 1974 (PL93-251). Section 22 reads, in part, as follows: "... The Secretary of the Army, acting through the Chief of Engineers, is authorized to cooperate with any State in the preparation of comprehensive plans for the development, utilization and conservation of the water and related resources..."

II. Scope of Study

This report is a result of information provided by the individual public water suppliers in the State. Each public water supplier in the State was contacted for consumption data of non-residential users. In many instances, the consumption figures were pulled from manual filing systems at the public water supplier's office. Other public water suppliers had computerized data bases from which listings of non-residential water users could be derived. Annual consumption figures for the latest twelve month period metered were taken for each non-residential user.

Each non-residential entity was classified into either manufacturing or non-manufacturing. Manufacturing firms were then broken down further according to Standard Industrial Codes (SIC). The Rhode Island Directory of Manufacturers was used as the source to determine manufacturing firms located within each community and their SIC group. From this directory, it was possible to approach each public water supplier with a listing of manufacturers potentially serviced by the system. It was then possible to get an annual consumption figure for each manufacturing firm on the list which withdrew water from the system. In some instances, manufacturing firms not identified by the directory were located in a community and received water from a public supplier. Where identified, these firms were included in the consumption figures for the public water supplier.

Non-manufacturing establishments were classified into seven categories. The ability to complete this classification was dependent upon information for each user on file at the water supplier. In cases where only an individual's name was on file for a non-residential user, town directories were used where available to classify users.

All consumption figures contained in the text or tables of this report are measured in gallons.

III. Industrial/Commercial Classifications

A system was needed to classify each non-residential user of water. The Standard Industrial Classification (SIC) system was used to classify manufacturing firms because the Rhode Island Directory of Manufacturers is broken down into these categories. This publication was the primary source of information concerning manufacturing firms located in the State. Non-manufacturing firms were broken into seven categories based upon the business in which they participate. The categories are agricultural, construction, wholesale and retail trade, services, utilities, governmental, and institutional. Finally, establishments not classifiable under the manufacturing or non-manufacturing classifications from the information available were included in a miscellaneous classification. The following presents a more detailed summary of the establishments in each manufacturing and non-manufacturing category.

A. Manufacturing Classifications

The Standard Industrial Classification system is used by the Office of Management and Budget and other statistical agencies of the Federal Government to define manufacturing processes. In some cases, a Rhode Island industry manufactures a variety of products and, therefore, falls under more than one classification. In such a case, the manufacturer is placed under the single classification which best represents its principal product.

Major (SIC) Group 20, Food and kindred products-including meat packing, dairy products, canned foods, bakery products, confectionery, beverages, and miscellaneous food preparations and kindred products.

Major (SIC) Group 22, Textile mill products-including scouring and combing, yarn and thread, broad-woven fabrics, narrow fabrics, knit goods, dyeing and finishing, carpets and rugs and other miscellaneous textile goods.

Major (SIC) Group 23, Apparel and other finished products made from fabrics and similar materials-including outerwear, under garments, miscellaneous apparel and accessories, curtains, draperies, canvas products, embroideries, and other fabricated textile products.

Major (SIC) Group 24, Lumber and wood products (except furniture)-including millwork, wooden containers, mirror and picture frames.

Major (SIC) Group 25, Furniture and fixtures-including household furniture, office furniture, partitions, shelving, office and store fixtures, screens, window shades, venetian blinds and miscellaneous furniture and fixtures.

Major (SIC) Group 26, Paper and allied products-including building paper, paper coating and glazing, paper bags, insulating paper, paper containers and boxes, fiber and paper tubes, die-cut paper, cardboard, and pressed and molded pulp goods.

Major (SIC) Group 27, Printing, publishing and allied industries-including newspaper, periodicals, greeting cards, bookbinding, and service industries for the printing trade.

Major (SIC) Group 28, Chemical and allied products-including industrial chemicals, drugs and medicines, cleaning and polishing preparations, paints, varnishes, lacquers, dyes, vegetable and animal oils and fats, and compressed and liquefied gases.

Major (SIC) Group 29, Products of petroleum and coal-including petroleum refining, paving and roofing materials, and lubricating oils and greases.

Major (SIC) Group 30, Rubber and plastic products-including rubber footwear, tire recapping, and miscellaneous rubber and plastic products.

Major (SIC) Group 31, Leather and leather products-including industrial belting, house slippers, luggage, and miscellaneous leather goods.

Major (SIC) Group 32, Stone, clay and glass products-including glass products made from purchased glass, cut-stone, concrete products, limestone, abrasive products, and structural clay and concrete products.

Major (SIC) Group 33, Primary metal industries-including iron and steel foundries, secondary smelting and refining, rolling, drawing and alloying, non-ferrous foundries, wire drawing, heat treating, and iron and steel forging.

Major (SIC) Group 34, Fabricated metal products, (except ordinance, machinery and transportation equipment)-including tin cans, cutlery, handy tools, hardware, heat apparatus, structural metal products, metal stamping, coating, engraving, plating, polishing, nails, wirework, metal containers, screw machine products and collapsible tubes.

Major (SIC) Group 35, Machinery (except electrical)-including machine tools, general and special machinery, office and store machines and devices, service-industry machines, valves and fittings, fabricated pipe fittings, and machine job shops.

Major (SIC) Group 36, Electrical machinery, electronics and allied industries-including wiring devices and suppliers, motors and generators, electrical appliances, insulated wire and cable, electrical equipment for motor vehicles, electric lamp parts, communication equipment, and storage batteries.

Major (SIC) Group 37 Transportation equipment-including truck bodies, motor vehicle parts and accessories, trailer, aircraft parts and equipment, and boat building and repairing.

Major (SIC) Group 38, Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks-including engineering instruments, measuring and controlling instruments, optical instruments and lenses, surgical and medical instruments and supplies, ophthalmic goods, and watch-cases.

Major (SIC) Group 39, Jewelry, jewelry findings, silverware, and related items-including precious jewelry, jeweler's findings, lapidary work, silverware and plated ware, costume jewelry, costume novelties, artificial flowers, buttons, and fasteners.

NON-MANUFACTURING CLASSIFICATIONS:

Agricultural-including nurseries, farms, hatcheries, and orchards.

Construction-including construction projects, sand and gravel operations, and construction offices.

Wholesale and retail trade-including retail stores, lounges, restaurants, gas stations, and any establishment which sells a product.

Utilities-transportation, communication, electrical, and gas-including electrical plants, gas operations, telephone companies, railroad stations, airports, bus operations, television and radio stations.

Services-including beauty parlors, banks, cleaners, theaters, motels, hotels, medical offices, health clubs, and all other establishments which sell a service rather than a product.

Governmental-including city and town buildings, State buildings, Federal buildings, military establishments, and schools.

Institutional-including hospitals, churches, nursing homes, colleges and universities.

Miscellaneous industries-including all establishments which were not classifiable under the SIC classification system or the Non-Manufacturing classification system.

IV. Summary - Industrial Withdrawal From Public Water Supply Systems

The following table presents a summary of the industrial water use as a percentage of total annual withdrawal for 23 of the 25 largest public water supply systems in the State. The Kent County Water Company and Pawtucket Water Supply Board are not included in this summary because the necessary information was not made available. Also, only the consumption by manufacturing firms from the Providence Water Supply Board is included in this report. The lack of a computerized data base from which data could be extracted and the sheer number of non-residential accounts made the task of developing consumption figures for non-manufacturing establishments unrealistic. A computerized system is expected to be fully operational within a year. At that time, the information will be more readily available and manageable.

The total annual withdrawal by these 23 water supply systems amounted to 38,299,927,020 gallons. The total annual industrial/commercial withdrawal from these systems was 5,429,500,790 gallons, representing 14.18 percent of the total withdrawal. This percentage is skewed because consumption by non-manufacturing firms from the Providence Water Supply Board was not included. A more accurate estimate of the percentage of industrial use can be made by omitting the Providence Water Supply Board from the calculation. Taking only the 22 other public water supplies into account, industrial water users accounted for 23.74 percent of the entire withdrawal from these systems.

Characteristics of each water supply system can be taken from the Table. However, two important points will be brought out. Although not including non-manufacturing consumption, the Providence Water Supply Board still had the largest daily industrial withdrawal at 3.642 MGD. Also, the East Smithfield Water District had the largest percentage of industrial consumption with 49.81 percent of the system's total withdrawal being used by non-residential users. The second largest percentage consumption by manufacturing and non-manufacturing firms was the Lincoln Water Department with 41.60 percent of the system's withdrawal used for these purposes.

TABLE 1
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM PUBLIC WATER SUPPLY SYSTEMS
(In Gallons)

Water System	No. Firms	Systems Total Annual Withdrawal	Total Industrial/Commercial Annual Withdrawal	Percent of Total Withdrawal	Daily Industrial Withdrawal MGD
Bristol County Water Company	585	1,555,309,000	276,000,050	17.71	0.747
Cumberland Water Department	193	573,680,000	227,094,680	39.59	0.622
East Providence Water Division	758	1,700,000,000	585,069,140	34.42	1.603
East Smithfield Water District	46	326,780,000	162,768,810	49.81	0.446
Greenville Water District	132	276,896,900	50,350,780	18.18	0.138
Harrisville Fire District	38	492,421,420	12,235,830	2.48	0.033
Jamestown Water Company	58	84,752,500	4,877,510	5.76	0.013
Kingstown Fire District	17	101,974,400	33,643,530	32.99	0.092
Lincoln Water Department	152	970,688,450	403,873,400	41.61	1.106
Narragansett Water Department	50	294,249,300	10,363,600	3.52	0.028
Newport Water Department	821	2,431,100,000	808,026,500	33.24	2.214
North Kingstown Water Department	178	782,985,000	93,213,700	11.90	0.255
North Tiverton Fire District	95	114,800,000	8,108,620	7.06	0.022
Pascoag Fire Department	59	69,384,000	15,895,600	22.91	0.044
Portsmouth Water & Fire District	221	392,992,000	56,025,000	14.26	0.154
Providence Water Supply Board ¹	422	21,041,790,000	1,329,238,870	6.32	3.642
Smithfield Water Supply Board	50	187,663,700	75,749,900	40.36	0.208
South Kingstown Water Department	36	94,174,200	6,838,940	7.26	0.019
Stone Bridge Fire District	49	79,902,150	9,516,970	11.91	0.026
Wakefield Water Company	410	577,279,000	143,442,400	24.85	0.393
Warwick Water Department	1271	3,459,840,000	428,794,730	12.39	1.175
Westerly Water Department	237	1,076,645,000	146,045,830	13.56	0.400
Woonsocket Water Department	636	1,614,620,000	542,326,400	33.59	1.486
Total ²	6514	38,299,927,020	5,429,500,790	14.18	14.874

¹ Includes only consumption data for manufacturing firms. Non manufacturing firms not included.

² Information not available from Kent County Water Company and Pawtucket Water Supply Board.

V. Summary - Total Withdrawal From Public Water Supplies By Industrial/Commercial Use

Information for this report was received from 23 of the largest 25 public water supply systems in the State of Rhode Island. The total amount of water distributed by these systems during the most recent 12-month metering period for which information was available amounted to 38.3 billion gallons. The daily withdrawal by the 6,514 industrial users included in this study was approximately 5.4 billion gallons. The average annual consumption per industrial firm was 833,420 gallons. This report does not include consumption figures for the Kent County Water Company and Pawtucket Water Supply Board.

Manufacturing

The consumption by manufacturing firms was 3.11 billion gallons, representing 57.2 percent of the total industrial withdrawal. Average daily consumption by manufacturing firms was 8.51 MGD. The 926 manufacturing firms had an average consumption figure per firm of 3,355,940 gallons. This average consumption figure was about eight times larger than the average consumption by non-manufacturing firms.

The manufacturing classification with the largest demand for water in the State of Rhode Island was SIC Group 22, textile mill products. Consumption by the 50 firms in this category was 545,454,260 gallons or 10.05 percent of the entire industrial consumption. Also, this classification accounted for 17.55 percent of the consumption by manufacturing firms. Each firm in this classification consumed an average of 10,909,090 gallons during the twelve month period. The average daily consumption by these firms measured 1.49 MGD.

The second largest consumption by a manufacturing industry was by SIC Group 39, jewelry, jewelry findings, silverware, and related items. The consumption by firms in this group measured 487,398,020 gallons. This group was comprised of 257 firms, the largest of any manufacturing classification. The consumption accounted for 8.98 percent of total industrial/commercial withdrawal and 15.68 percent of the manufacturing demand. The average daily withdrawal by these firms was 1.34 MGD. The average consumption per firm in this group was 1,896,490 gallons, an average far below that of many manufacturing classifications.

The firms in SIC Group 34, fabricated metal products, had the third largest consumption by a manufacturing classification. The 132 firms in this group had a consumption of 450,756,560 gallons. This amount was 8.30 percent of total industrial demand and 14.50 percent of consumption by all manufacturing firms. The average daily demand was 1.23 MGD. Each firm had an average consumption of 3,414,820 gallons, very close to the average annual use per firm when all manufacturing firms are taken into account.

Other manufacturing classifications with large consumptions were: SIC Group 33, primary metal industries; SIC Group 28, chemical and allied products; and SIC Group 20, food and kindred products. Each of these groups had annual consumptions at or near 200,000,000 gallons.

Non-Manufacturing

The non-manufacturing consumption figures include information for 22 public water suppliers in the State of Rhode Island. Information was not readily available for non-manufacturing firms getting their water supply from the Providence Water Supply Board. A new computerized billing and metering system is currently being implemented which will make data more accessible and manageable for the thousands of non-manufacturing firms deriving their water supply from that system. The total consumption of water by non-manufacturing firms from the 22 public water supply systems was 2.26 billion gallons. This was 41.56 percent of the total industrial/commercial consumption. The 5,550 non-manufacturing firms included in this report had an average annual consumption of 406,490 gallons. The average daily demand was 6.18 MGD.

The largest consumption by a non-manufacturing category was by wholesale and retail firms. The consumption by the 2,725 firms in this category was 636,151,030 gallons, an average daily flow of 1.74 MGD. This represented 11.72 percent of total industrial/commercial consumption and 28.20 percent of non-manufacturing demand. Average consumption for each firm in this category was 233,450 gallons.

The second largest consumption by a non-manufacturing category was by governmental agencies. The 472 establishments in this category had a consumption of 598,377,640 gallons. This represents an average daily demand of 1.64 MGD. This category accounted for 11.02 percent of the total industrial/commercial consumption and 26.52 percent of the non-manufacturing demand. The average consumption per establishment was 1,267,750 gallons. This was the largest average consumption per firm for any of the non-manufacturing categories.

The third and fourth largest consumptions by a non-manufacturing category were firms in the service industries and institutional establishments. The 1,309 service firms had a consumption of 452,898,090 gallons while the 326 institutional users had a consumption of 405,758,240 gallons. The three remaining non-manufacturing categories had much lower consumptions.

In some instances, firms could not be accurately classified into the seven non-manufacturing categories. It was known they were not manufacturers, but inadequate information was available to put them into a non-manufacturing category. The 512 establishments fitting this description had a consumption of 63,464,370 gallons. Likewise, some establishments could not even be classified as manufacturing or non-manufacturing. The 38 establishments in this category had an annual consumption of 65,324,280. Combined, these miscellaneous industrial users accounted for 2.37 percent of the total industrial consumption.

TABLE 2
WITHDRAWAL FROM PUBLIC WATER SUPPLIES FOR INDUSTRIAL/COMMERCIAL USE
(In Gallons)

Industrial Grouping	No. Firms	Total Annual Withdrawal	Average Daily Withdrawal	Average Annual Withdrawal Per Firm	Percent of Total Industrial/Commercial Use
Total Manufacturing (SIC)	926	3,107,603,810	8,513,980	3,355,940	57.24
Food & Kindred Products (20)	54	194,844,260	533,820	3,608,230	3.59
Textile Mill Products (22)	50	545,454,260	1,494,400	10,909,090	10.05
Apparel & Other Products From Fabrics and Similar Materials (23)	11	19,414,110	53,190	1,764,920	0.36
Lumber & Wood Products (24)	6	2,546,580	6,980	424,430	0.05
Furniture & Fixtures (25)	13	25,288,900	69,280	1,945,300	0.47
Paper & Allied Products (26)	24	77,960,650	213,590	3,248,360	1.44
Printing, Publishing, & Allied Industries (27)	74	143,000,160	391,780	1,932,430	2.63
Chemical & Allied Products (28)	31	259,437,000	710,790	8,368,940	4.78
Products of Petroleum and Coal (29)	1	26,919,770	73,750	26,919,770	0.50
Rubber & Plastic Products (30)	30	77,646,530	212,730	2,588,220	1.43
Leather & Leather Products (31)	13	24,782,520	67,900	1,906,350	0.46
Stone, Clay & Glass Products (32)	18	29,482,050	80,770	1,637,890	0.54
Primary Metal Industries (33)	45	329,257,470	902,080	7,316,830	6.06
Fabricated Metal Products (34)	132	450,756,560	1,234,950	3,414,820	8.30
Machinery (Except Electrical) (35)	86	118,501,080	324,660	1,377,920	2.18
Electrical Machinery, Electronics & Allied Industries (36)	30	84,555,870	231,660	2,818,530	1.56
Transportation Equipment (37)	22	90,527,820	248,020	4,114,900	1.67
Professional, Scientific, & Controlling Instruments; Photographic and Optical Goods; Watches, Clocks (38)	29	119,830,200	328,300	4,132,080	2.21
Jewelry, Jewelry Findings, Silverware & Related Items (39)	257	487,398,020	1,335,340	1,896,490	8.98

Industrial Grouping	No. Firms	Total Annual Withdrawal	Average Daily Withdrawal	Average Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Non-Manufacturing	5550	2,255,992,700	6,180,800	406,490	41.55
Wholesale & Retail Trade	2725	636,151,030	1,742,880	233,450	11.72
Services	1309	452,898,090	1,240,820	345,990	8.34
Governmental	472	598,377,640	1,639,390	1,267,750	11.02
Institutional	326	405,758,240	1,111,670	1,244,660	7.47
Utilities	93	16,344,870	44,780	175,750	0.30
Agricultural	65	79,609,680	218,110	1,224,760	1.47
Construction	48	3,387,780	9,280	70,580	0.06
Miscellaneous Non-Manufacturing	512	63,465,370	173,880	123,960	1.17
Miscellaneous Industries	38	65,904,280	180,560	1,734,320	1.21
Total	6514	5,429,500,790	14,873,770	833,420	100.00

VI. Industrial Water Use By System

A. Introduction

The format to be used to present information about each public water supply system will be a brief system description, a discussion of the manufacturing and non-manufacturing classifications with the largest consumptions of water, and a tabular summary of consumption within the water supply system for each of the manufacturing and non-manufacturing classifications. As noted earlier, the Kent County Water Company and Pawtucket Water Supply Board did not make detailed consumption information available.

B. Bristol County Water Company

System Description

The Bristol County Water Company is a private water system serving the town of Barrington, 8.9 square miles; the town of Bristol, 10.2 square miles; and the town of Warren, 5.8 square miles. For the calendar year 1985, the system's total water production amounted to 1,555 million gallons, an average daily withdrawal of 4.26 MGD. The system generally provides water to a suburban clientele.

Industrial/Commercial Withdrawal

The total withdrawal by the 585 manufacturing and non-manufacturing firms which derive their water supply from the Bristol County Water Company was 276,000,050 gallons. This figure represents 17.75 percent of the system's total withdrawal. The average daily demand by these establishments was 0.76 MGD compared to an average daily demand for the entire system of 4.26 MGD. The average annual consumption per industrial user for 1985 was 471,790 gallons.

Manufacturing

A total of 40 manufacturing firms are serviced by the Bristol County Water Company. These firms had a consumption of 97,332,770 gallons during the year, representing 35.14 percent of the total industrial/commercial demand and 6.22 percent of the entire system's withdrawal. Manufacturing firms had an average daily demand of 0.27 MGD. The average flow per firm during the year was 2,435,320 gallons.

The manufacturing classification with the largest water consumption was SIC Group 20, food and kindred products. The six firms in this classification had a consumption for the year of 45,284,670 gallons. This represented 16.40 percent of the total industrial/commercial consumption and 46.53 percent of the withdrawal by all manufacturing firms. The average daily flow amounted to 0.12 MGD. The annual consumption per firm was 7,574,450 gallons. The use by these firms was more than double the consumption of any other manufacturing classification.

The second largest consumption by a manufacturing classification was by SIC Group 22, textile mill products. The five firms in this classification consumed 19,823,500 gallons during 1985. This represented 7.18 percent of industrial/commercial consumption and 20.37 percent of the total manufacturing withdrawal. The average daily demand by these five firms was 0.54 MGD with an average consumption per firm for the year of 3,964,700 gallons.

The third highest withdrawal by an industrial classification was by SFL Group 39, jewelry and related items. The firms in this classification had a consumption of 9,758,410 gallons during the year. This was an average usage of 3,252,800 gallons for each of the three firms in this classification. This group's consumption was 3.54 percent of the total industrial/commercial demand. Other manufacturing classifications with significant consumption were SIC Group 30, rubber and plastic products and SIC Group 31, leather and leather products. Consumption by these two classifications were 7,366,300 and 4,467,060 gallons, respectively.

Non-Manufacturing

The total consumption by non-manufacturing establishments during 1985 was 158,410,690 gallons. This withdrawal represented 57.40 percent of the industrial/commercial demand and 10.19 percent of the system's withdrawal. The average daily demand by the 538 non-manufacturing establishments was 0.43 MGD. The average annual consumption per firm amounted to 294,440 gallons.

The largest consumption by a non-manufacturing category was by institutional establishments. The 58 institutional users had a consumption during 1985 of 68,537,740 gallons. This demand represented 24.83 percent of the entire industrial/commercial consumption and 43.27 percent of the demand by all non-manufacturing users. The average daily consumption by these establishments was 0.188 MGD. The average annual withdrawal per institutional user was 1,181,690 gallons.

The second largest consumption by a non-manufacturing category was by firms in the service industries. The 143 service firms used 31,288,090 gallons during the year. This demand accounted for 11.34 percent of the total industrial/commercial consumption and 19.75 percent of the water consumed by non-manufacturing firms. The average daily withdrawal by all these firms amounted to 0.086 MGD. The average annual consumption per firm was 218,800 gallons.

Two other non-manufacturing categories had consumptions slightly below that of the service category. The two groups are wholesale and retail trade firms and governmental entities with consumptions of 29,474,190 and 24,011,550 gallons, respectively.

TABLE 3
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
BRISTOL COUNTY WATER COMPANY
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	40	97,332,770	266,670	2,433,320	35.26
Food & Kindred Products (20)	6	45,284,670	124,070	7,574,450	16.40
Textile Mill Products (22)	5	19,823,500	54,310	3,964,700	7.18
Apparel & Other Products From Fabrics and Similar Materials (23)	1	294,710	810	294,710	0.11
Furniture & Fixtures (25)	1	27,680	80	27,680	0.01
Paper & Allied Products (26)	2	491,440	1,350	245,720	0.18
Printing Publishing & Allied Industries (27)	2	112,950	310	56,480	0.04
Rubber & Plastic Products (30)	3	7,366,300	20,180	2,455,430	2.67
Leather & Leather Products (31)	2	4,467,060	12,240	2,233,530	1.62
Stone, Clay & Glass Products (32)	1	1,133,970	3,110	1,133,970	0.41
Primary Metal Industries (33)	2	2,233,530	6,120	1,116,770	0.81
Fabricated Metal Products (34)	1	226,640	620	226,640	0.08
Machinery (Except Electrical) (35)	3	1,766,030	4,840	588,680	0.64
Transportation Equipment (37)	7	3,649,490	1000	521,360	1.32
Professional, Scientific & Con- trolling Instruments; Photographic and Optical Goods; Watches and Clocks (38)	1	696,390	1910	696,390	0.25
Jewelry, Jewelry Findings, Silverware & Related Items (39)	3	9,758,410	26,740	3,252,800	3.54
Total Non-Manufacturing	538	158,410,690	434,000	294,440	57.40
Wholesale & Retail Trade	233	29,474,190	80,750	126,500	10.68
Services	143	31,288,090	85,720	218,800	11.34
Governmental	83	24,011,550	65,790	289,300	8.70
Utilities	13	1,841,580	5,050	141,660	0.67

Institutional	58	68,537,740	187,770	1,181,690	24.83
Agricultural	3	3,005,460	8,230	1,001,820	1.09
Construction	5	252,080	690	50,420	0.09
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Miscellaneous Industries	7	20,256,590	55,500	2,893,800	7.34
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Total	585	276,000,050	756,160	471,790	100.00

C. Cumberland Water Department

System Description

The town of Cumberland Water Department is a municipal system owned and operated by the town of Cumberland. The system services all of Cumberland, 27.1 square miles, with the exception of the Vally Falls and Lonsdale areas which are served by the Pawtucket system. The service area is comprised of both suburban and rural areas. The total consumption for the system for the period 7/1/84-6/30/85 amounted to 573.680 million gallons. The average daily demand was 1.572 MGD.

Industrial/Commercial Withdrawal

The total industrial withdrawal from the Cumberland Water Department amounted to 227,094,680 gallons. A total of 193 manufacturing, non-manufacturing, and miscellaneous establishments used 1,176,660 gallons of water during the year. This consumption represented 39.59% of the systems total demand. The average daily demand for all industrial/commercial establishments was 0.622 MGD, as compared to the total average daily consumption of 1.572 MGD for the whole system.

Manufacturing

Manufacturing firms withdrew 181,032,680 gallons from the Cumberland Water Department system. This withdrawal accounted for 79.72% of the total industrial/commercial demand and 31.56% of the system's entire consumption. This demand represents an average daily usage of 0.496 MGD. The 15 manufacturing firms consumed an average of 12,068,850 gallons during the year. However, this figure is very misleading because three firms account for over 80% of the consumption by manufacturers. These three firms had an average consumption of 53,291,710 gallons, while the other twelve manufacturers had an average consumption of 1,763,130 gallons.

The manufacturing classification with the highest water consumption was SIC Group 28, chemical and allied products. The consumption by manufacturers in this group was 103,243,520 gallons, an average withdrawal during the year of 51,621,760 gallons for each of the two firms in this group. This demand was 57.03% of the total manufacturing consumption and 45.46% of the total industrial/commercial consumption. The average daily demand for this group amounted to 0.283 MGD.

The second highest demand by an manufacturing classification was by SIC Group 33, primary metal industries. One firm accounted for the entire consumption of 56,631,600 gallons during the year. This represents 31.28% of the total manufacturing demand and 24.94% of the total industrial/commercial demand. The average daily flow was 0.155 MGD. The only other classification with a significant demand was SIC Group 23, apparel and other finished products made from fabrics and similar materials. The

two firms in this group consumed 11,902,350 gallons during the year, an average of 5,951,180 gallons per firm. This demand was 6.57% of the total manufacturing demand and 5.24% of the total industrial/commercial demand. The average daily demand by the firms in this classification was 0.032 MGD.

The only other SIC Groups with annual consumption of over 1,000,000 gallons were: SIC Group 20, food and kindred products; SIC Group 31, leather and leather products; SIC Group 35, machinery (except electrical); and SIC Group 37, transportation equipment.

Non-Manufacturing

Non-manufacturing interests withdrew 37,490,680 gallons during the year. This demand was 16.51% of the total industrial/commercial withdrawal and 6.54% of the system's entire consumption. The average annual demand per firm by the 170 establishments in this category was 220,530 gallons. The average daily withdrawal amounted to 0.103 MGD.

The largest consumer by a non-manufacturing classification was the service industries. The consumption by these firms during the year amounted to 12,699,200 gallons. This demand represented 33.87% of the total non-manufacturing use and 5.59% of the total industrial/commercial consumption. The 48 firms in this category consumed an average of 264,570 gallons during the year. The daily withdrawal was 0.035 MGD.

The second largest demand by a non-manufacturing category was by the wholesale and retail firms being serviced. The consumption for the 86 firms in this category was 12,209,790 gallons, an average annual consumption per firm of 141,970 gallons. This withdrawal was 32.57% of the total non-manufacturing consumption and 5.38% of the total industrial demand. The average daily flow for the wholesale and retail firms was 0.033 MGD.

The third and fourth largest non-manufacturing demands were government and institutional establishments, respectively. The 13 government users consumed 5,261,710 gallons, while the 8 institutional connections used 5,158,610 gallons. Both these categories had an average daily demand of 0.014 MGD.

Miscellaneous

Within the Cumberland Water Department service area, consumption by 8 miscellaneous firms equaled 8,571,320 gallons. This accounted for 3.77% of the total industrial/commercial demand and 1.49% of the systems entire flow. Average daily consumption by these users was 0.023 MGD.

TABLE 4
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
CUMBERLAND WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	15	181,032,680	495,980	12,068,850	79.72
Food & Kindred Products (20)	1	1,560,090	4,270	1,560,090	0.69
Apparel & Other Finished Products From Fabric & Similar Materials (23)	2	11,902,350	32,610	5,951,180	5.24
Chemical & Allied Products (28)	2	103,243,520	282,860	51,621,760	45.46
Rubber & Plastic Products (30)	1	345,380	950	345,380	0.15
Leather & Leather Products (31)	2	1,292,650	3,540	646,330	0.57
Primary Metal Industries (33)	1	56,631,600	155,160	56,631,600	24.94
Machinery (Except Electrical) (35)	4	2,768,480	7,580	692,120	1.22
Transportation Equipment (37)	1	2,938,890	8,050	2,938,890	1.29
Jewelry, Jewelry Findings, Silverware & Related Items (39)	1	349,720	960	349,720	0.15
Total Non-Manufacturing	170	37,490,680	102,710	220,530	16.51
Wholesale & Retail Trade	86	12,209,790	33,450	141,970	5.38
Services	48	12,699,200	34,790	264,570	5.59
Governmental	13	5,261,710	14,420	404,750	2.32
Utilities	10	1,297,490	3,550	129,750	0.57
Institutional	8	5,158,610	14,130	644,830	2.27
Agricultural	5	863,880	2,370	172,780	0.38
Miscellaneous Industries	8	8,571,320	23,480	1,071,420	3.77
Total	193	227,094,680	622,180	1,176,660	100.00

D. East Providence Water Division

System Description

The city of East Providence Water Division is a municipal system owned and operated by the city of East Providence. The system services the entire city of East Providence, a total of 13.3 square miles. The system purchases water from the Providence Water Supply Board to satisfy demand. From July 1, 1984-June 30, 1985, the total water consumption of the East Providence Water Division was approximately 1,700.00 million gallons, an average withdrawal of 4.66 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial water consumption of the city of East Providence Water Division amounted to 585,069,140 gallons for this time period. A total of 758 establishments, both manufacturing and non-manufacturing, were involved in this determination. Industrial and commercial users consumed 34.42% of the systems entire flow for the period. The average withdrawal for industrial purposes was 1.60 MGD, as compared to the 4.66 MGD withdrawal for the entire system. The average annual demand per establishment was 711,860 gallons.

Manufacturing

The withdrawal from the East Providence system by manufacturing firms was determined to be 312,056,630 gallons. The demand was 53.34% of the total industrial/commercial consumption and 18.36% of the system's entire withdrawal. Manufacturing firms had an average daily consumption of 0.855 MGD. The average annual demand per manufacturer was 3,152,090 gallons. Demand figures for 99 manufacturing firms in the city were included in these calculations.

The manufacturing classification with the largest water consumption was SIC Group 26, paper and allied products. The demand by the seven manufacturers in this group amounted to 67,447,160 gallons, 21.61% of the total demand by manufacturing firms and 11.53% of total industrial/commercial consumption. The average annual consumption per firm in this category was 9,635,310 gallons. The average consumption of these firms was 0.185 MGD.

The next highest consumption was registered by firms in SIC Group 39; jewelry, jewelry findings, silverware and relate items. The nineteen firms in this group had a consumption of 59,963,420 gallons for the year. This demand accounted for 19.22% of the total manufacturing consumption and 10.25% of the total industrial/commercial demand. The average annual consumption per firm was 3,155,970 gallons. The average daily demand by these firms was 0.164 MGD.

The third highest consumption by a manufacturing classification was firms in SIC Group 38; professional, scientific and controlling instruments; photographic and optical goods; watches and clocks. A total of six firms used 36,474,720 gallons of water during the year, an average of 6,079,120 gallons per firm. This represented 11.69% of total manufacturing consumption and 6.23% of the total industrial/commercial demand. The average daily demand of these firms was 0.099 MGD. Other industry classifications with significant consumption of water were: SIC Group 20, food and kindred products; SIC Group 28, chemical and allied products; SIC Group 29, petroleum and coal product; and SIC Group 34, fabricated metal products (except ordinance, machinery and transportation equipment).

Non-Manufacturing

The consumption by non-manufacturing establishments within East Providence amounted to 268,496,090 gallons, or 45.89% of total industrial/commercial demand. This amount accounted for 15.79% of the entire system's demand. The average daily demand of the non-manufacturing establishments was 0.736 MGD. The 655 users in this category had an average annual withdrawal of 409,920 gallons per firm.

The largest consumer group under the non-manufacturing classification was wholesale and retail trade firms. The 346 firms in this group consumed 78,932,700 gallons during the year, an average demand of 228,130 gallons per firm. This demand was 29.40% of the total consumption by non-manufacturing establishments and 13.49% of the total industrial/commercial demand. The average daily withdrawal amounted to 0.216 MGD.

The second largest water consumption by a non-manufacturing group was by firms in the service industries. The 184 firms comprising this group had a consumption of 64,425,990 gallons, an average annual withdrawal of 350,140 gallons per firm. This demand represented 24.00% of total non-manufacturing consumption and 11.01% of total industrial/commercial water use. The average withdrawal by firms in this classification was 0.176 MGD. Other non-manufacturing groups with substantial consumption during the year were institutional and agricultural users (country clubs, golf courses) with demand for the year above 50,000,000 gallons in each instance.

Miscellaneous

The four miscellaneous firms with East Providence consumed 4,516,420 gallons. This amount is 0.77% of the total industrial/commercial demand and 0.27% of the entire systems withdrawal. The annual consumption per firm was 1,129,110 gallons. The average daily flow was 0.012 MGD.

TABLE 5
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
EAST PROVIDENCE WATER DIVISION
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial Commercial Use
Total Manufacturing	99	312,056,630	854,950	3,152,090	53.34
Food & Kindred Products (20)	9	26,889,100	73,670	2,987,680	4.60
Textile Mill Product (22)	2	219,910	600	109,960	0.04
Furniture & Fixtures (25)	1	534,070	1,460	534,070	0.09
Paper & Allied Products (26)	7	67,447,160	184,790	9,635,310	11.53
Printing, Publishing & Allied Industries (27)	6	1,280,580	3,510	213,430	0.22
Chemical & Allied Products (28)	11	21,657,590	59,340	1,968,870	3.70
Petroleum & Coal Products (29)	1	26,919,770	73,750	26,919,770	4.60
Rubber & Plastic Products (30)	1	2,603,040	7,130	2,603,040	0.44
Leather & Leather Products (31)	2	274,520	750	137,260	0.05
Stone, Clay & Glass Products (32)	2	2,532,730	6,940	1,266,370	0.43
Primary Metal Industries (33)	8	16,068,540	44,020	2,008,570	2.75
Fabricated Metal Products (34)	10	20,384,500	55,850	2,038,450	3.48
Machinery (Except Electrical) (35)	11	7,631,100	20,910	693,740	1.30
Electrical Machinery, Electronics, & Allied Industries (36)	2	7,872,700	21,570	3,936,350	1.35
Transportation Equipment (37)	1	13,303,180	36,450	13,303,180	2.27
Professional, Scientific, & Controlling Instruments; Photographic and Optical Goods; Watches, Clocks (38)	6	36,474,720	99,930	6,079,120	6.23
Jewelry, Jewelry Findings Silverware & Related Items (39)	19	59,963,420	164,280	3,155,970	10.25

Total Non-Manufacturing	655	268,496,090	735,610	409,920	45.89
Wholesale & Retail Trade	346	78,932,700	216,250	228,130	13.49
Services	184	64,425,990	176,510	350,140	11.01
Governmental	51	13,003,980	35,630	254,980	2.22
Utilities	17	6,488,900	17,780	381,700	1.11
Institutional	50	50,066,630	137,170	1,001,330	8.56
Agricultural	2	55,444,000	151,900	27,722,000	9.48
Construction	5	133,890	370	26,780	0.02
Miscellaneous Industries	4	4,516,420	12,370	1,129,110	0.77
Total	758	585,069,140	1,602,930	771,860	100.00

E. East Smithfield Water District

System Description

The East Smithfield Water District was established by an enactment of the General Assembly in 1934. The act authorizes the corporation to provide service within and without the district in the towns of Smithfield, North Providence and a portion of Johnston.

The system serves the village of Greystone, North Providence and northerly through Georgiaville and Esmond in Smithfield to the vicinity of Route 295. For the most part, the East Smithfield Water District serves an urban population. From April 1, 1984 to March 31, 1985, the total water withdrawn from the system amounted to 326,780,050 gallons. The daily flow averaged 0.895 MG.

Industrial/Commercial Withdrawal

Forty six firms, both manufacturing and non-manufacturing, were involved in the industrial/commercial water calculation of East Smithfield Water District. The total annual industrial/commercial withdrawal from the system amounted to 162,768,810 gallons, or 49.81% of the entire system's withdrawal. The daily industrial/commercial withdrawal averaged 0.446 MG, as compared to an average daily demand of 0.895 MGD for the entire system. The annual consumption per firm averaged 3,538,450 gallons.

Manufacturing

The total consumption by non-manufacturing firms was measured at 133,113,750 gallons. This gallonage amounted for 81.78% of the total industrial/commercial flow and 40.73% of the system's entire withdrawal. Manufacturing interests, in total, consumed 364,700 gallons per day. The annual consumption per manufacturing firm averaged 10,239,520 gallons. A total of 13 manufacturing firms derive their water supply from the system.

The manufacturing classification with the highest water use was SIC Group 22, Textile Mill Products. The annual consumption by this category was 92,783,920 gallons, representing 69.7% of the total manufacturing withdrawal and 57.0% of the total industrial/commercial flow. The daily flow for this group averaged 0.254 MG. The two firms in this classification had an average consumption per firm of 46,391,960 gallons.

The next highest consumption by a manufacturing industry was SIC Group 34, fabricated metal products. The consumption for this classification reached 29,457,410 gallons. This group's consumption was 22.13% of the withdrawal by manufacturing firms and 18.10% of the total industrial/commercial demand. The daily consumption averaged 0.08 MGD, with the annual use per firm averaging 7,364,350 gallons.

Other than the above two manufacturing groups, no other manufacturing classifications made significant withdrawals from the East Smithfield Water District.

Non-Manufacturing

The total withdrawal by the non-manufacturing establishments within the East Smithfield service area amounted to 29,655,060 gallons. This withdrawal was 18.22% of the total industrial/commercial flow and 9.1% of the entire system's consumption. Thirty three firms were included in the calculations. The daily flow of the non-manufacturing category averaged 0.08 MG. The annual consumption per firm reached 898,640 gallons.

The largest non-manufacturing consumer group was the governmental sector. The consumption for this category was 16,443,610 gallons, equal to 55.45% of the total non-manufacturing withdrawal and 10.1% of the total industrial/commercial flow. The average daily flow for this group reached 0.045 MGD, while the average annual withdrawal per establishment amounted to 3,288,720 gallons.

The next highest user group was wholesale and retail trade firms with a total annual withdrawal of 6,273,980 gallons. The 21 firms in this group accounted for 21.16% of the total non-manufacturing withdrawal and 3.85% of the total industrial/commercial demand. The firms in this category had an average daily demand of 0.017 MGD. The average consumption per firm over the twelve month period was 289,760 gallons.

TABLE 6
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
EAST SMITHFIELD FIRE DISTRICT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	13	133,113,750	364,700	10,239,520	81.78
Food & Kindred Products (20)	1	98,030	270	98,030	0.06
Textile Mill Products (22)	2	92,783,920	254,200	46,391,960	57.00
Stone, Clay & Glass Products (32)	1	469,290	1,290	469,290	0.29
Primary Metal Industries (33)	1	2,273,100	6,230	2,273,100	1.40
Fabricated Metal Products (34)	4	29,457,410	80,710	7,364,350	18.10
Machinery (Except Electrical) (35)	3	4,353,000	11,930	1,451,000	2.67
Professional Scientific, and Controlling Instruments; Photographic and Optical Goods; Clocks and Watches (38)	1	3,679,000	10,080	3,679,000	2.26
Total Non-Manufacturing	33	29,655,060	81,250	898,640	18.22
Wholesale & Retail Trade	21	6,273,980	17,190	298,760	3.85
Services	3	3,510,480	9,620	1,170,160	2.16
Governmental	5	16,443,610	45,050	3,288,720	10.10
Institutional	3	3,405,800	9,330	1,135,270	2.09
Construction	1	21,190	60	21,190	0.01
Total	46	162,768,810	445,940	3,538,450	100.00

F. Greenville Water District

System Description

The Greenville Water District Was established by the General Assembly in 1955. The areas served by the district, all in the town of Smithfield, include Greenville, Sprauge Lower Reservoir to the Johnston town line, Route 5 to and including Austin Avenue. The district serves a rural and suburban population. The total withdrawal from the water supply system during the period May 1984-April 1985 measured 276,896,900 gallons. This was an average daily demand of 0.76 MGD.

Industrial/Commercial Withdrawal

One hundred and thirty two firms, manufacturing, non-manufacturing and miscellaneous, were involved in Greenville's industrial/commercial calculations. The industrial/commercial flow for the Greenville system amounted to 50,350,780 gallons, equaling 18.18% of the system's entire withdrawal. The average daily industrial/commercial demand equaled 0.138 MGD, as compared to 0.759 MGD for the entire system. The annual withdrawal per industrial firm averaged 378,580 gallons.

Manufacturing

From May 1984-April 1985, manufacturing interests withdrew 5,356,580 gallons from the Greenville Water District, or 10.64% of the total industrial/commercial demand and 1.93% of the systems entire withdrawal. The manufacturing demand averaged 0.015 MGD during the period. The 10 manufacturing firms deriving their water supply from the system used an average of 535,660 gallons per firm.

The manufacturing classification with the highest water consumption was SIC Group 34, fabricated metal products. The consumption by the 3 firms in this group amounted to 1,607,560 gallons, or 3.19% of the total industrial/commercial flow and 30.01% of the total manufacturing withdrawal. The average daily flow amounted to 0.004 MGD. The average annual withdrawal per firm was 535,850 gallons. The only other manufacturing classification with consumption greater than 1,000,000 gallons was SIC Group 20, food and kindred products.

Non-Manufacturing

Non-manufacturing withdrawal measured 42,919,600 gallons. This figure was 85.24% of the total industrial/commercial consumption and 15.50% of the system's entire withdrawal. The average daily demand for all the non-manufacturing firms equaled 0.118 MG. Average annual use reached 354,710 gallons per non-manufacturing firm.

The largest non-manufacturing customer was wholesale and retail trade establishments. The consumption for this classification measured

20,074,720 gallons. This flow equaled 39.87% of the total industrial/-commercial consumption and 46.77% of the entire non-manufacturing withdrawal. The 62 firms in this category consumed an average of 323,790 gallons per firm. The average daily demand by firms in this classification was 0.055 MGD.

The next largest non-manufacturing water user was the service industries. This category includes any establishments which sell a service rather than a product. The withdrawal during the twelve month period by firms in this classification measured 13,974,640 gallons. The corresponding average daily demand amounted to 0.038 MGD. The annual withdrawal for the 39 establishments in this classification averaged 358,320 gallons per firm.

TABLE 7
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
GREENVILLE WATER DISTRICT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	10	5,356,580	14,680	535,660	10.64
Food & Kindred Products (20)	1	1,058,100	2,900	1,058,100	2.10
Stone, Clay & Glass Products (32)	1	156,900	430	156,900	0.31
Fabricated Metal Products (34)	3	1,607,560	4,400	535,850	3.19
Machinery (Except Electrical) (35)	2	752,000	2,060	376,000	1.49
Professional, Scientific and Controlling Instruments; Photographic & Optical Goods; Clocks and Watches (38)	1	860,000	2,360	860,000	1.71
Jewelry, Jewelry Findings, Silverware, and Related Items (39)	2	922,020	2,530	461,010	1.83
Total Non-Manufacturing	121	42,919,600	117,590	354,710	85.24
Wholesale & Retail Trade	62	20,074,720	55,000	323,790	39.87
Services	39	13,974,640	38,290	358,320	27.75
Governmental	8	3,278,970	8,980	409,870	6.51
Institutional	6	4,611,750	12,630	768,620	9.16
Construction	3	689,320	1,890	229,770	1.37
Utility	1	34,970	100	34,970	0.07
Agricultural	2	255,230	700	127,620	0.51
Miscellaneous Industries	1	2,074,600	5,680	2,074,600	4.12
Total	132	50,350,780	137,950	378,580	100.00

G. Harrisville Fire District

System Description

The Harrisville water supply system is owned and operated by the Harrisville Fire District. The system serves Harrisville and an area within a radius extending from 1 to 1-1/2 miles. The district serves a rural-suburban community. From September, 1984 to August, 1985, the total amount of water withdrawn from the system amounted to 492,421,420 gallons. The average daily flow measured 1.35 MGD.

Industrial/Commercial Withdrawal

Thirty-eight firms, both manufacturing and non-manufacturing, were involved in the industrial calculations for the Harrisville system. The total industrial/commercial consumption measured 12,235,830 gallons, representing 2.48% of the system's total flow. The daily industrial withdrawal averaged 0.034 MGD, as compared to 1.35 MGD for the entire system. The average annual flow per firm amounted to 322,000 gallons.

Manufacturing

The manufacturing withdrawal from the Harrisville water supply system was 168,600 gallons. This demand equaled only 1.38% of the total industrial/commercial demand. Four small manufacturing firms consumed on the average of 460 gallons of water per day. The average consumption per firm was only 42,150 gallons during the year. No industrial classification dominated the consumption by manufacturing firms with information presented in the table.

Non-Manufacturing

The non-manufacturing withdrawal from the system amounted to 12,054,960 gallons, representing 98.52% of the total industrial/commercial flow and 2.45% of the total withdrawal from the system. The daily flow for non-manufacturing firms averaged 0.033 MGD. The average annual withdrawal per firm measured 365,300 gallons. A total of 33 non-manufacturing firms derive their water supply from the Harrisville Fire District.

The largest non-manufacturing consumer was institutional establishments. The consumption by firms in this category amounted to 5,764,160 gallons, or 47.83% of the total non-manufacturing withdrawal and 47.11% of all industrial/commercial water use. The average daily demand by the 4 entities comprising this group was 0.016 MGD. The annual consumption per establishment averaged 1,441,040 gallons.

Three other categories constitute the entire remaining consumption by non-manufacturing entities. These categories are wholesale, retail and trade firms, service industries, and the governmental sector. Information regarding these categories can be found in the table.

TABLE 8
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
HARRISVILLE FIRE DISTRICT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	4	168,600	460	42,150	1.38
Textile Mill Product (22)	1	72,930	200	72,930	0.60
Chemical & Allied Products (28)	1	57,000	160	57,000	0.47
Fabricated Metal Products (34)	2	38,670	110	19,340	0.32
Total Non-Manufacturing	33	12,054,960	33,030	365,300	98.52
Wholesale & Retail Trade	14	1,153,020	3,160	82,360	9.42
Services	6	2,404,100	6,590	400,680	19.65
Governmental	9	2,733,680	7,490	303,740	22.34
Institutional	4	5,764,160	15,790	1,441,040	47.11
Miscellaneous Industries	1	12,270	30	12,270	0.10
Total	38	12,235,830	33,520	322,000	100.00

H. Jamestown Water Company

The Jamestown Water Company is owned and operated by the town of Jamestown. The system serves the southern portion of Conanicut Island from the salt marsh in the Great Creek area southerly to include the Beaver Neck area, principally a suburban and seasonal population. For the period May 1984-April 1985, the total withdrawal from the system equaled 84,752,500 gallons. This represented an average daily consumption of 0.23 MGD.

Industrial/Commercial Withdrawal

The total industrial withdrawal from the system measured 4,877,510 gallons representing 5.76% of the system's total flow. A total of 58 establishments getting their water supply from the Jamestown Water Company had an average daily demand of 0.013 MGD. The annual consumption per industrial firm averaged 84,100 gallons.

Manufacturing

The total manufacturing consumption of water provided by the Jamestown Water Company system measured 15,000 gallons. This figure was 0.31% of the total industrial/commercial demand and 0.02% of the system's total pumpage. One manufacturing firm received its water supply from this system. The firm was in SIC Group 22, textile mill products. The average daily demand by this manufacturing firm represented a negligible amount.

Non-Manufacturing

Non-manufacturing interests had a withdrawal during the year of 4,862,510 gallons. This flow represented 99.69% of the total industrial/commercial consumption and 5.75% of the system's entire withdrawal. The average daily demand amounted to 0.013 MGD, while the average annual flow per firm was 85,310 gallons. A total of 57 non-manufacturing firms are serviced by the Jamestown Water Company.

The largest consumption of water by a non-manufacturing category was by wholesale and retail trade firms. Consumption by these firms reached 3,028,740 gallons, accounting for 62.10% of the total industrial/commercial flow and 62.29% of the entire non-manufacturing consumption. The average daily consumption by this classification was 0.008 MGD. The average annual flow for the 28 firms in this group amounted to 108,170 gallons per firm.

The second largest non-manufacturing category in terms of water consumption was by firms in the service industries. The 21 firms in this category used 1,276,170 gallons over the twelve month period, an average daily flow of 0.004 MGD. The average consumption per firm was 60,770 gallons for the year. The demand by service industry firms was 26.16% of the entire industrial/commercial consumption and 26.24% of the total non-manufacturing consumption.

TABLE 9
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
JAMESTOWN WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	1	15,000	40	15,000	0.31
Textile Mill Products (22)	1	15,000	40	15,000	0.31
Total Non-Manufacturing	57	4,862,510	13,320	85,310	99.69
Wholesale & Retail Trade	28	3,028,740	8,300	108,170	62.10
Services	21	1,276,170	3,500	60,770	26.16
Governmental	7	547,600	1,500	78,230	11.23
Utilities	1	10,000	30	10,000	0.21
Total	58	4,877,510	13,360	84,100	100.00

I. Kingston Fire District

System Description

The Kingston Fire District system serves the village of Kingston and vicinity, with the service area encompassing approximately four square miles. For the period July 1984-June 1985, the total withdrawal from the water supply system amounted to 101,974,400 gallons. This represented an average daily demand of 0.28 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial demand upon the Kingston system was 33,643,530 gallons. This consumption equaled 32.99% of the systems entire flow. The average industrial withdrawal was 0.092 MGD, as compared to 0.28 MGD withdrawn from the entire system. The average annual consumption per firm measured 1,979,030 gallons. No manufacturing firms were among the 17 industrial/commercial users serviced by the water supply system.

Non-Manufacturing

The largest industrial/commercial water user was institutional interests. The flow for this classification equaled 30,352,760 gallons, representing 90.22% of the total industrial/commercial demand. The average flow amounted to 0.083 MGD. The average annual consumption per interest amounted to 4,336,110 gallons. Seven institutional establishments are serviced by the Kingstown Fire District.

The next highest non-manufacturing water consumer was the service industries. This category includes any establishments which sell a service rather than a product. The consumption by the one firm in this classification reach 2,037,030 gallons. This figure was 6.05% of the industrial/commercial withdrawal. The average flow per day equaled 0.006 MGD.

TABLE 10
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
KINGSTON WATER DISTRICT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	0	0	0	0	0
Total Non-Manufacturing	17	33,643,530	92,170	1,979,030	100.00
Wholesale & Retail Trade	6	699,470	1,920	116,580	2.08
Services	1	2,037,030	5,580	2,037,030	6.05
Governmental	3	554,270	1,520	184,760	1.65
Institutional	7	30,352,760	83,160	4,336,110	90.22
Total	17	33,643,530	92,170	1,979,030	100.00

J. Lincoln Water Department

System Description

The town of Lincoln Water Department is a municipal water supply system owned and operated by the town of Lincoln. The system serves the villages of Manville, Albion, Quinville, Lonsdale, Sylesville, and the North Central Industrial Air Park. The withdrawal from the water supply system during the calendar year 1984 measured 970,688,450 gallons, equal to an average daily demand of 2.66 MGD.

Industrial/Commercial Withdrawal

One hundred and fifty-two firms, manufacturing, non-manufacturing, and miscellaneous, were involved in the calculations to determine the Lincoln Water Department's industrial/commercial withdrawal. In 1984, this demand reached 403,873,400 gallons. This consumption represented 41.61% of the system's entire withdrawal. The daily industrial/commercial flow averaged 1.11 MGD as compared to 2.66 MGD for the entire system. The average annual withdrawal per firm was 2,657,060 gallons.

Manufacturing

Manufacturing withdrawal from the Lincoln system was 344,491,400 gallons. This withdrawal accounted for 35.49% of the system's entire demand and 85.30% of the total industrial/commercial consumption. Manufacturing firms had an average daily consumption of 0.944 MGD. The annual consumption per manufacturing firm averaged 6,151,630 gallons.

The manufacturing classification with the greatest consumption was SIC Group 22, textile mill products. The consumption by the five firms in this category measured 94,629,600 gallons, accounting for 27.47% of the total manufacturing withdrawal and 23.43% of the entire industrial/commercial demand. The daily flow averaged 0.26 MGD. The average annual flow per firm was 18,925,920 gallons.

The second largest manufacturing consumer was SIC Group 28, chemical and allied products. The 4 firms in this classification had a consumption of 70,348,900 gallons during the year. This accounted for 20.42% of the manufacturing demand and 17.42% of the total industrial/commercial withdrawal. The annual use per firm in the chemical industry averaged 17,587,230 gallons. The daily demand averaged 0.193 MGD.

Other manufacturing classifications with significant consumptions were SIC Group 34, fabricated metal products; SIC Group 38, professional, scientific and controlling instruments; photographic and optical goods; clocks and watches; and SIC Group 33 primary metal industries.

Non-Manufacturing

The withdrawal by non-manufacturing establishments from the Lincoln water system measured 52,142,200 gallons, representing 12.91% of the total industrial/commercial withdrawal and 5.37% of the system's entire flow. The daily withdrawal averaged 0.143 MGD. That annual use for each of the 93 non-manufacturing firms averaged 560,670 gallons.

The largest consumer under the non-manufacturing category was the wholesale and retail trade firms. The consumption by the 31 firms in this category was 18,160,600 gallons. This demand accounted for 34.83% of the total non-manufacturing consumption and 4.50% of the entire industrial/commercial withdrawal. The average daily demand by firms in this classification was 0.05 MGD. Each firm used an average of 585,830 gallons during the twelve month period.

The second largest consumption by a non-manufacturing category was by firms in the service industries. These firms consumed 17,117,800 gallons, accounting for 32.83% of non-manufacturing demand and 4.24% of the total industrial/commercial consumption. The average daily demand by this category was 0.047 MGD and the average consumption per firm for the 28 users in this category was 611,350 gallons.

Miscellaneous

Miscellaneous industries are those industries and firms which were not classifiable from the information available. Withdrawal for the 3 such industrial/commercial firms amounted to 7,239,800 gallons, or 1.79% of the total industrial/commercial flow. Daily withdrawal averaged 0.02 MGD while the annual consumption per firm was 2,413,270 gallons.

TABLE 11
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
LINCOLN WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	56	344,491,400	943,810	6,151,630	85.30
Food & Kindred Products (20)	4	17,688,300	48,410	4,417,080	4.37
Textile Mill Products (22)	5	94,629,600	259,260	18,925,920	23.43
Printing, Publishing & Allied Industries (27)	2	325,300	890	162,650	0.08
Chemical & Allied Products (28)	4	70,348,900	192,740	17,587,230	17.42
Rubber & Plastic Products (30)	1	199,100	550	199,100	0.05
Stone, Clay & Glass Products (32)	2	2,042,500	5,600	1,021,250	0.51
Primary Metal Industries (33)	8	58,450,100	160,140	7,306,260	14.47
Fabricated Metal Products (34)	10	34,284,400	93,930	3,428,440	8.49
Machinery (Except Electrical) (35)	9	13,576,700	37,200	1,508,520	3.36
Electrical Machinery, Electronics, & Allied Industries (36)	2	9,222,500	25,270	4,611,250	2.29
Transportation Equipment (37)	1	1,019,300	2,790	1,019,300	0.25
Professional, Scientific, and Controlling Instruments; Photographic and Optical Goods; Clocks and Watches (38)	3	26,283,500	72,010	8,761,170	6.51
Jewelry, Jewelry Findings, Silverware, and Related Items (39)	5	16,421,200	44,990	3,284,240	4.07

Total Non-Manufacturing	93	52,142,200	142,860	560,670	12.91
Wholesale & Retail Trade	31	18,160,600	49,760	585,830	4.50
Services	28	17,117,800	46,900	611,350	4.24
Governmental	16	5,259,500	14,410	328,720	1.30
Utilities	11	3,368,400	9,230	306,220	0.83
Institutional	4	7,801,900	21,380	1,950,480	1.93
Agricultural	3	434,000	1,190	144,670	0.11
Miscellaneous Industries	3	7,239,800	19,840	2,413,270	1.79
Total	152	403,873,400	1,106,500	2,657,060	100.00

K. Narragansett Water Department

System Description

Two systems are owned and maintained by the town of Narragansett, the Point Judith System and the North End System. The Point Judith System extends throughout the area south of Angell Road and west of Old Point Judith Road including Jerusalem, Galilee, Great Island, and Harbour Island. The system also serves that area south of Angell road and east of Old Point Judith Road, excluding the Village of Narragansett Pier, the Scarborough Beach area, and the shore area north of Scarborough Beach and east of Boston Neck Road.

The North End System serves the area west of Boston Neck Road and north of Woodridge and Mettatuxet Roads. The system also serves the area east of Boston Neck Road, north of Bonnet Shores to the North Kingstown town line. For the period July 1984 - June 1985, the water supply system had a total withdrawal of 294,249,300 gallons. The average daily demand was 0.81 mgd.

Industrial/Commercial Withdrawal

For the period July 1984-June 1985, the total industrial/commercial withdrawal from the Narragansett System measured 10,363,600 gallons. This gallonage represented 3.52% of the system's entire consumption. The daily withdrawal for all industrial/commercial purposes averaged 0.028 MGD as compared to a demand of 0.81 MGD for the entire system. The annual withdrawal per industrial firm averaged 207,270 gallons.

Manufacturing

The total consumption of water provided by the Narragansett Systems by manufacturers measured 6,717,200 gallons. This figure represented 64.82% of the total industrial/commercial demand and 2.28% of the system's total withdrawal. The average daily consumption by manufacturers measured 0.018 MGD.

The only manufacturing classification with a large withdrawal from the system was SIC Group 20, food and kindred products. The three firms in this group had a consumption for the year of 6,712,600 gallons. This accounted for 64.77% of the total industrial/commercial demand. The average daily demand by these firms was 0.018 mgd. Two other manufacturing classifications had miniscule consumptions from the system. These were SIC Group 34, fabricated metal products and SIC Group 35, machinery (except electrical).

Non-Manufacturing

Consumption for non-manufacturing interests amounted to 3,646,400 gallons, representing 35.18% of the industrial/commercial consumption. The daily demand by the 45 non-manufacturing firms serviced by this supply system was 0.01 MGD. The annual flow averaged 81,030 gallons per firm.

The largest non-manufacturing consumer was by firms in the service industries. The consumption by the 11 firms in this classification amounted to 1,420,000 gallons. This withdrawal was 13.70% of the total industrial/commercial demand and 38.94% of the non-manufacturing use. The daily consumption averaged 0.004 MGD while the annual flow per firm averaged 129,090 gallons.

The next largest consumption by a non-manufacturing category was the wholesale and retail trade firms. The total use by the 29 firms in this category was 1,243,600 gallons, accounting for 12.00% of the industrial/commercial demand and 34.10% of the total non-manufacturing withdrawal. The daily demand by these firms was 0.003 MGD. The annual withdrawal per firm averaged 42,880 gallons.

TABLE 12
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
NARRAGANSETT WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	5	6,717,200	18,400	1,343,440	64.82
Food & Kindred Products (20)	3	6,712,600	18,390	2,237,530	64.77
Fabricated Metal Products (34)	1	1,600	--	1,600	0.02
Machinery (Except Electrical) (35)	1	3,000	--	3,000	0.03
Total Non-Manufacturing	45	3,646,400	9,990	81,030	35.18
Wholesale & Retail Trade	29	1,243,600	3,410	42,880	12.00
Services	11	1,420,000	3,890	129,090	13.70
Governmental	3	498,000	1,360	166,000	4.80
Utilities	1	146,800	400	146,800	1.42
Agricultural	1	338,000	930	338,000	3.26
Total	50	10,363,600	28,390	207,270	100

L. Newport Water Department

System Description

The Newport Water Department is owned and operated by the city of Newport. The distribution system services the entire city of Newport, 7.7 square miles, including the U.S. Navy facilities. Also, portions of neighboring Middleton and Portsmouth are serviced by the Newport Water Department. The Portsmouth Water and Fire District purchases water from the Newport system to augment their other supply sources. For the period July 1984 - June 1985 the total withdrawal from the Newport distribution system was 2,431.1 million gallons. This represents an average daily demand of 6.66 MGD. This withdrawal amount does not include water sold to Portsmouth and distributed by that system.

Industrial/Commercial Withdrawal

For the period July 1984 - June 1985, the industrial/commercial withdrawal from the Newport water supply system amounted to 808,026,500 gallons, an average daily flow of 2.21 MGD. This amount equals 33.2% of the system's total withdrawal over the 12 month period. The average demand per establishment was 984,200 gallons for the 821 industrial/commercial users deriving their water supply from the Newport system.

Manufacturing

The consumption by manufacturing firms amounted to 97,293,980 gallons. This represented 12.04% of the system's total industrial/commercial consumption and 4.00% of the total withdrawal from the Newport system. A total of 34 manufacturing firms get their water supply from this system. The average annual demand per firm was 2,861,590 gallons. The daily consumption by the manufacturing firms was 0.26 MGD.

The manufacturing category with the largest consumption was SIC Group 37, transportation equipment. The consumption by the six firms in this classification measured 54,502,200 gallons for the year. This represented 56.02% of the total demand by manufacturing firms and 6.75% of the total industrial/commercial demand. The average annual consumption per firm was 9,083,700 gallons. The daily withdrawal by this category averaged 0.149 MGD.

The second largest water consumption by an industrial group was SIC Group 38, professional, scientific and controlling instruments; photographic and optical goods; watches and clocks. Firms in this classification used 33,228,700 gallons of water during the year. This was 34.15% of the total demand by manufacturing firms and 4.11% of the industrial/commercial flow. The average annual consumption per firm was 5,538,120 gallons. The average daily use by these firms was 0.091 MGD.

Non-Manufacturing

The withdrawal by non-manufacturing firms from the Newport water supply system totaled 705,847,920 gallons. This consumption equalled 87.35% of the industrial/commercial demand and 29.03% of the system's pumpage. The 783 non-manufacturing establishments used an average of 901,470 gallons per firm during the twelve month period. The average daily demand by non-manufacturing firms was 1.934 MGD.

The non-manufacturing category with the largest consumption was the governmental sector with a consumption of 440,237,600 gallons. The majority of this usage was by United States Navy facilities in Newport. This demand was 62.37% of the total consumption by non-manufacturing firms and 54.48% of the total industrial/commercial withdrawal. The average daily demand by governmental consumers was 1.206 MGD. The 57 establishments in this group had an average consumption of 7,723,470 gallons each.

The second largest consumer of water by a non-manufacturing category was by firms in the service industries. Consumption by the 229 firms in this classification amounted to 122,160,760 gallons. This amount was 17.31% of the consumption by all non-manufacturing establishments and 15.12% of the total industrial/commercial demand. The average daily withdrawal by the service firms was 0.335 MGD. The consumption per firm in this category was 533,450 gallons.

Other non-manufacturing classifications with significant consumptions were wholesale and retail firms and institutional establishments. The demand by these categories was 94,079,980 and 43,779,000 gallons, respectively.

TABLE 13
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
NEWPORT WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/Commercial Use
Total Manufacturing	34	97,293,980	266,560	2,861,590	12.04
Food & Kindred Products (20)	2	6,089,500	16,680	3,044,750	0.75
Apparel & Other Products From Fabric and Similar Materials (23)	1	326,900	900	326,900	0.04
Furniture & Fixtures (25)	1	18,900	50	18,900	--
Printing, Publishing & Allied Industries (27)	6	614,000	1,680	102,330	0.08
Rubber & Plastic Products (30)	2	336,800	920	168,400	0.04
Stone, Clay & Glass Products (32)	1	128,200	350	128,200	0.02
Fabricated Metal Products (34)	1	54,450	150	54,450	0.01
Machinery (Except Electrical) (35)	2	388,850	1,070	194,430	0.05
Electrical Machinery, Electronics, & Allied Industries (36)	6	1,605,480	4,400	267,580	0.20
Transportation Equipment (37)	6	54,502,200	149,320	9,083,700	6.75
Professional, Scientific, & Controlling Instruments; Photographic and Optical Goods; Watches, Clocks (38)	6	33,228,700	91,040	5,538,120	4.11
Total Non-Manufacturing	783	705,847,920	1,933,830	901,470	87.35
Wholesale & Retail Trade	458	94,079,980	257,750	205,410	11.64
Services	229	122,160,760	334,690	533,450	15.12
Governmental	57	440,237,600	1,206,130	7,723,470	54.48
Utilities	13	1,214,180	3,330	93,400	0.15
Institutional	9	43,779,000	119,940	4,864,330	5.42
Agricultural	8	3,570,900	9,780	446,360	0.44
Construction	9	805,500	2,210	89,500	0.10

Miscellaneous Industries	4	4,884,600	13,380	1,221,150	0.60
Total	821	808,026,500	2,213,770	984,200	100.0

M. North Kingstown Water Department

System Description

The town of North Kingstown Water Department is a municipally owned and operated water supply system. The system serves the entire town, approximately 43.5 square miles. The system provides water to both a suburban and rural population characteristic of the community. During calendar year 1985, the total withdrawal from the system measured 782.985 million gallons. The average daily demand was 2.15 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial withdrawal from the North Kingstown water supply system was 93,213,700 gallons, representing 11.9 percent of the system's demand. The daily withdrawal for industrial/commercial purposes was 0.25 MGD. The average withdrawal per industrial/commercial user was 523,670 gallons for each of the 178 establishments.

Manufacturing

The withdrawal from the system by manufacturing firms measured 54,831,130 gallons. This demand was 58.82 percent of the total industrial/commercial usage and 7.00 percent of the system's total withdrawal. The average daily demand of manufacturing firms was 0.15 MGD. The fourteen manufacturing firms used an average of 3,916,510 gallons each during 1985.

The largest withdrawal of water by an industry classification was by SIC Group 35, machinery (except electrical). The two firms in SIC Group 35 used 35,832,800 gallons of water during the year. This demand accounted for 65.35% of the manufacturing consumption and 38.44% of the total industrial/commercial withdrawal. This represented an average daily demand of 0.098 MGD, and an average annual consumption per firm of 17,916,400 gallons. The only other manufacturing classification with a significant consumption was SIC Group 30, rubber and plastic products. The one firm in SIC Group 30 consumed 17,725,400 gallons during the year, corresponding to an average daily demand of 0.049 MGD.

Non-Manufacturing

Consumption by non-manufacturing establishments measured 38,260,570 gallons for the twelve month period. This demand was 41.05 percent of the total industrial/commercial consumption and 4.89 percent of the system's total withdrawal. The average daily demand was 0.105 MGD for all non-manufacturing establishments, with an average annual consumption per firm of 234,730 gallons. A total of 163 non-manufacturing establishments get their water supply from the North Kingstown Water Department.

The largest consumption by a manufacturing category was by firms in the service industries. Firms in this category consumed 10,294,010 gallons during 1985, an average daily demand of 0.028 MGD. This withdrawal was 26.91 percent of the total non-manufacturing consumption and 11.04 percent of the entire industrial/commercial demand. The 20 firms in this category used an average of 514,700 gallons per firm for the year.

The second largest consumption by a non-manufacturing category was for governmental purposes. The consumption by government agencies measured 8,068,940 gallons during the year, representing an average daily demand of 0.022 MGD. This withdrawal is 21.09 percent of the total non-manufacturing demand and 8.66 percent of the total use by industrial/commercial customers. The 46 consumers in this category had an average use of 175,410 gallons for the year.

Two other categories had a consumption just below that of the government users. The categories were institutional establishments and wholesale and retail trade firms. The 39 institutional establishments consumed 8,004,640 gallons during the year, while the 46 wholesale and retail trade firms used 7,261,660 gallons.

TABLE 14
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
NORTH KINGSTOWN WATER DEPARTMENT
(In Gallons)

Industrial Groupings	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing (SIC)	14	54,831,130	150,220	3,916,510	58.82
Food & Kindred Products (20)	1	458,200	1,260	458,200	0.49
Furniture & Fixtures (25)	3	69,700	190	23,230	0.07
Chemical & Allied Products (28)	3	346,650	950	115,550	0.37
Rubber & Plastic Products (30)	1	17,725,400	48,560	17,725,400	19.02
Primary Metals Industry (33)	1	55,460	150	55,460	0.06
Fabricated Metal Products (34)	2	109,970	300	54,990	0.12
Machinery (Except Electrical) (35)	2	35,832,800	98,170	17,916,400	38.44
Transportation Equipment (37)	1	232,950	640	232,950	0.25
Total Non-Manufacturing	163	38,260,570	104,820	234,730	41.05
Wholesale & Retail Trade	46	7,261,660	19,890	157,860	7.79
Services	20	10,294,010	28,200	514,700	11.04
Governmental	46	8,068,940	22,110	175,410	8.66
Utilities	2	95,090	260	47,550	0.10
Institutional	39	8,004,640	21,930	205,250	8.59
Agricultural	10	4,536,230	12,430	453,620	4.87
Miscellaneous Industries	1	122,000	330	122,000	0.13
Total	1	93,213,700	255,380	523,670	100.00

N. North Tiverton Fire District

System Description

The North Tiverton Fire District was created by enactment of the General Assembly in 1926. The area served by the system is bounded on the north by the Rhode Island state line, on the south by Carey Lane, on the west by Mount Hope Bay, and on the east by a line just east of Fish Road. The water supply system serves a generally suburban population. The daily demand for the period July 1, 1984 - June 30, 1985 was 0.314 MGD. The total withdrawal for this period measured 114.8 million gallons.

Industrial/Commercial Withdrawal

The total industrial/commercial consumption from the North Tiverton water supply system measured 8,108,620 gallons. This withdrawal represented 7.06% of the system's total consumption. The average daily demand by industrial/commercial users was 0.022 MGD. The average annual consumption per establishment was 85,350 gallons. A total of 95 establishments are serviced by the North Tiverton Fire District.

Manufacturing

The total withdrawal from the North Tiverton Fire District by manufacturing firms for the twelve month period was 588,530 gallons. This consumption was 7.26% of the entire industrial/commercial withdrawal and only 0.51% of the system's entire pumpage. The annual demand for the three manufacturing firms serviced by the system was 196,180 gallons.

The single manufacturing classification with a significant consumption was SIC Group 20, food and kindred products. The consumption by the one firm in this classification was 489,280 gallons. This demand accounted for 6.03% of the total industrial/commercial demand and 83.14% of the total manufacturing withdrawal. The average daily demand was 0.001 MGD, a very small daily consumption.

Two other manufacturing classifications are represented by one firm each withdrawing water from the North Tiverton water supply system. These two classifications are SIC Group 32, stone, -clay, and glass products and SIC Group 33, primary metal industry. The consumption of water by these two firms is relatively small, with each using under 100,000 gallons during the year. Combined these two classifications represent only 1.23% of the total industrial/commercial consumption from the system.

Non-Manufacturing

The withdrawal by non-manufacturing establishments measured 7,520,090 gallons, constituting 92.74% of the total industrial/commercial consumption and 6.55% of the system's entire withdrawal. A total of 92 firms and establishments in this category are serviced by the North

Tiverton water supply system. These establishments had an average daily demand of 0.021 MGD and consumed an average of 81,540 gallons per firm during the twelve month period.

The largest non-manufacturing user of water by a category was by wholesale and retail trade firms. The 61 firms in this category consumed 4,752,370 gallons, an average annual demand of 77,910 gallons per firm. This withdrawal represented 58.61% of the total industrial/commercial consumption and 63.20% of the total non-manufacturing consumption. The average daily demand was 0.013 MGD. This was by far the largest consumption by a manufacturing category from the North Tiverton water supply system.

The second largest consumption by a non-manufacturing category was by those firms in the service industries. The consumption by these firms amounted to 1,777,290 gallons. This consumption was 21.92% of the total industrial/commercial flow and 23.63% of the non-manufacturing demand. The 17 firms in this category used an average of 104,550 gallons during the year. The average daily flow was 0.005 MGD. The remaining non-manufacturing categories have average daily demands at or below 0.001 MGD, a small fraction of the system's total average daily demand.

TABLE 15
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
NORTH TIVERTON FIRE DISTRICT
(In Gallons)

Industrial Groupings	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing (SIC)	3	588,530	1,610	196,180	7.26
Food & Kindred Products (20)	1	489,280	1,340	489,280	6.03
Stone, Clay & Glass Products (32)	1	88,110	240	88,110	1.09
Primary Metal Industries (33)	1	11,140	30	11,140	0.14
Total Non-Manufacturing	92	7,520,090	20,600	81,540	92.74
Wholesale & Retail Trade	61	4,752,370	13,020	77,910	58.61
Services	17	1,777,290	4,870	104,550	21.92
Governmental	6	474,750	1,300	79,130	5.85
Utilities	3	129,460	350	43,150	1.60
Agricultural	2	325,380	890	162,690	4.01
Construction	3	60,840	170	20,280	0.75
Total	95	8,108,620	22,210	85,350	100.00

O. Pascoag Fire District

System Description

The Pascoag Fire District serves an area which includes the villages of Pascoag and Bridgeton. For the period July 1, 1984 - June 30, 1985, the total consumption within the system was 69,384,000 gallons. This corresponds to an average daily flow of 0.19 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial withdrawal from the Pascoag system measured 15,895,600 gallons. This gallonage was 22.91% of the system's entire flow. The daily withdrawal for industrial/commercial purposes averaged 0.043 MGD as compared to the 0.190 MGD demand for the entire system. The annual withdrawal per firm averaged 269,420 gallons.

Manufacturing

Through July 1, 1984 - June 30, 1985, manufacturing interests withdrew 3,056,480 gallons from the Pascoag system. This flow represented 19.23% of the total industrial/commercial flow and 4.40% of the system's entire withdrawal. The manufacturing flow averaged 0.008 MGD with the annual withdrawal per firm amounting to 1,528,240 gallons.

Two manufacturing firms are serviced by the Pascoag Fire District. One firm in SIC Group 20, food and kindred products, had a consumption of 2,839,410 gallons for the year. The second firm in SIC Group 34, fabricated metal products, consumed 217,070 gallons during the period.

Non-Manufacturing

The withdrawal by non-manufacturing firms from the system measured 12,839,120 gallons. Fifty-seven firms included in the calculations accounted for 80.77% of the entire industrial/commercial demand and 18.50% of the system's total withdrawal. Non-manufacturing establishments had an average daily demand of 0.035 MGD. The average annual withdrawal per firm amounted to 225,250 gallons.

The largest non-manufacturing category user was institutional establishments. The flow for this category measured 6,365,980 gallons, representing 49.58% of the non-manufacturing demand and 40.05% of the entire industrial/commercial consumption. The eight establishments in this category had an average daily consumption of 0.017 MGD. The annual consumption per firm averaged 795,750 gallons.

The second largest consumer category were the wholesale and retail trade firms. This group consumed 3,482,400 gallons, accounting for 27.12% of non-manufacturing demand and 21.91% of the total industrial/commercial consumption. The average daily demand by the 29 firms comprising this group was 0.010 MGD. The annual consumption per firm averaged 120,080 gallons.

TABLE 16
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
PASCOAG FIRE DISTRICT
(In Gallons)

Industrial Groupings	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing (SIC)	2	3,056,480	8,370	1,528,240	19.23
Food & Kindred Products (20)	1	2,839,410	7,780	2,839,410	17.86
Fabricated Metal Products (34)	1	217,070	590	217,070	1.37
Total Non-Manufacturing	57	12,839,120	35,180	225,250	80.77
Wholesale & Retail Trade	29	3,482,400	9,540	120,080	21.91
Services	12	2,607,510	7,140	217,290	16.40
Governmental	7	350,730	960	50,100	2.21
Utilities	1	32,500	90	32,500	0.20
Institutional	8	6,365,980	17,440	795,750	40.05
Total	59	15,895,600	43,550	269,420	100.00

P. Portsmouth Water & Fire District

System Description

The Portsmouth Water and Fire District is owned and operated by a special district organization. The system serves the entire town of Portsmouth except the Lawton Valley Section in the southwestern portion of the community, served by the Newport distribution system. For the time period May 1, 1984 - April 30, 1985, the total withdrawal from the system measured 392.992 million gallons. The equivalent average daily demand is 1.08 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial withdrawal for the Portsmouth water system was 56,025,000 gallons. This amount represented 14.26% of the system's total pumpage. The average daily demand averaged 0.154 MGD, compared to the average daily demand of 1.08 MGD for the entire water supply system. The average annual consumption per establishment was 253,510 gallons. A total of 221 industrial/commercial interests draw water from the system.

Manufacturing

Manufacturing consumption measured 13,509,000 gallons for the year. This flow was 24.11% of total industrial/commercial demand and only 3.44% of the system's entire withdrawal. The six manufacturing firms in the community consumed an average of 2,251,500 gallons during the year. Manufacturing firms had an average daily demand of 0.037 MGD.

Three manufacturing classification groups had similar consumptions during the year. The largest demand was by SIC Group 36, electrical machinery, electronics and allied industries. The consumption by the two manufacturing firms in this classification was 3,791,000 gallons, an average of 1,895,500 gallons per firm. This accounted for 28.06% of the total manufacturing demand and 6.77% of the total industrial/commercial withdrawal. The average daily demand for this classification was 0.010 MGD.

The second largest manufacturing classification in terms of water consumption was SIC Group 37, transportation equipment. The one manufacturer in this category consumed 3,644,000 gallons for the twelve month period. This represents an average daily demand of 0.010 MGD, just slightly below the average daily demand of SIC Group 36. The third largest water consumption by a manufacturing classification was by SIC Group 32. The one firm in this classification used 3,290,000 gallons during the year, an average daily consumption of 0.009 MGD.

Other manufacturing classifications withdrawing from the Portsmouth Water & Fire District were SIC Group 33, primary metal industries and SIC

Group 27, publishing and allied industries. Each classification had one firm serviced by the water supply system.

Non-Manufacturing

Total withdrawal from the system by non-manufacturing establishments measured 42,516,000 gallons. This demand accounted for 75.89% of the total industrial/commercial consumption. The average daily flow was 0.116 MGD with each of the 215 establishments using 197,750 gallons during the year.

The largest non-manufacturing user was establishments offering services to the public. The total consumption by establishments in this category amounted to 11,411,000 gallons, equal to 20.37% of the total industrial/commercial demand. The average daily demand by these firms was 0.031 MGD. The 58 firms consumed an average of 196,740 gallons during the year.

The second largest category of non-manufacturing consumption was agricultural, fisheries and animal husbandry industries. This category includes farms, florist products, hatcheries, both fish and poultry, and other agricultural interests. The total water consumption by establishments in this category measured 9,954,000 gallons. This represents an average daily demand of 0.027 MGD. This demand was 17.77% of the total industrial/commercial consumption and 23.41% of the total non-manufacturing consumption. The 24 establishments in this category used an average of 414,750 gallons during the twelve month period.

The third largest consumption by a non-manufacturing category was by institutional users. The 13 establishments in this category consumed 9,538,000 gallons during the year, equal to an average daily demand of 0.026 MGD. This consumption was 17.02% of the total industrial/commercial demand and 22.43% of the total non-manufacturing withdrawal. The average use by an establishment in this category was 733,690 gallons, the highest demand per firm of any non-manufacturing category.

TABLE 17
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
PORTSMOUTH WATER & FIRE DISTRICT
(In Gallons)

Industrial Groupings	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing (SIC)	6	13,509,000	37,010	2,251,500	24.11
Printing, Publishing & Allied Industries (27)	1	124,000	340	124,000	0.22
Stone, Clay & Glass Products (32)	1	3,290,000	9,010	3,290,000	5.87
Primary Metal Industries (33)	1	2,660,000	7,290	2,660,000	4.75
Electrical Machinery, Electronics & Allied Industries (36)	2	3,791,000	10,390	1,895,500	6.77
Transportation Equipment (37)	1	3,644,000	9,980	3,644,000	6.50
Total Non-Manufacturing	215	42,516,000	116,480	197,750	75.89
Wholesale & Retail Trade	91	7,850,000	21,510	86,260	14.01
Services	58	11,411,000	31,260	196,740	20.37
Governmental	19	3,471,000	9,510	182,680	6.20
Institutional	13	9,538,000	26,130	733,690	17.02
Utilities	4	155,000	420	38,750	0.28
Agricultural	24	9,954,000	27,270	414,750	17.77
Construction	6	137,000	380	22,830	0.24
Total	221	56,025,000	153,500	253,510	100.00

Q. Providence Water Supply Board

System Description

The city of Providence Water Supply Board operates a municipally owned water supply system. The system serves the entire city of Providence and portions of Cranston, North Providence, and Johnston. For calendar year 1985, the total withdrawal from the Providence Water Supply Board system measured 21,041.80 MG. This represents an average daily demand on the system of 57.65 MGD.

Industrial/Commercial Withdrawal

The industrial/commercial withdrawal from the Providence Water Supply Board was determined for only manufacturing firms withdrawing from the system. The total number of nonresidential billing accounts on file at the Providence Water Supply Board was estimated at 60,000. The vast majority of these nonresidential accounts will be non-manufacturing establishments. At the current time, a manual filing system is in use for metering and billing purposes. To go through approximately 60,000 accounts to determine an annual consumption for each and then categorizing this many users was deemed impossible. A sampling technique was attempted to determine water use in each category but the accuracy of the consumption figures to be developed was questionable. This was particularly of concern given the non-manufacturing consumption for other water suppliers was developed from individual consumption figures.

The Providence Water Supply Board is currently in the process of computerizing the metering and billing data bases. The computer system, to be completely installed within a year, will make it much easier to develop the desired consumption figures for non-manufacturing categories according to the Providence Water Supply Board. It was agreed that the non-manufacturing consumption figures could be developed much more readily after the new computer system is operational.

Manufacturing

Withdrawal from the system by manufacturing firms amounted to 1,329.24 MGD. This consumption was 6.32% of the system's entire distribution. This represents an average daily demand of 3.64 MGD. The average consumption during the year by each of the 442 manufacturing firms was 3,149,860 gallons.

The manufacturing classification with the largest water consumption was SIC Group 39, jewelery, jewelry findings, silverware, and related items. The 196 firms in this category had a withdrawal of 387,577,140 gallons over the 12 month period. This consumption accounted for 29.16% of the total manufacturing demand. The average daily demand by firms in this group was 1.06 MGD, while the average consumption per firm was 1,977,430 gallons.

The second largest consumption by a manufacturing group was by firms in SIC Group 34, fabricated metal products. The 76 firms in this group had a consumption for the year of 316,585,240 gallons. This demand represented an average daily withdrawal of 0.87 MGD, accounting for 23.82% of the total consumption by manufacturing firms. The average consumption per firm was 4,165,600 gallons.

Other manufacturing groups with annual consumptions of greater than 100,000,000 gallons were SIC Group 33, primary metal industries and SIC Group 27, printing, publishing, and allied industries. The consumption by these groups was 175,330,380 and 125,100,310 gallons, respectively. A number of other groups had substantial consumptions, but were relatively insignificant when compared to the consumption of the largest user groups.

R. Smithfield Water Supply Board

System Description

The Smithfield Water Supply Board operates a municipally owned system for the town of Smithfield. The system serves an area approximately one mile north of Route 295, southerly to the vicinity of Mineral Spring Avenue in North Providence, and from Douglas Pike, north of Whipple Road, easterly to the town line. For the period May 1984 - April 1985, the town withdrawal from the water supply system was 187,663,700 gallons. This represented an average daily demand of 0.51 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial withdrawal from the Smithfield system measured 75,749,900 gallons. This gallonage represented 40.36% of the system's entire flow. The daily industrial/commercial withdrawal averaged 0.207 MGD, as compared to 0.514 MGD for the entire system. The annual consumption per industrial/commercial firm averaged 1,515,000 gallons. A total of 50 industrial/commercial establishments are serviced by the Smithfield Water Supply Board.

Manufacturing

For the twelve month period, manufacturing withdrawal measured 17,043,810 gallons, an average daily consumption of 0.47 MGD. This demand was 22.50% of the industrial/commercial consumption and 9.08% of the system's entire pumpage. Ten establishments were involved in the calculations with the average annual flow per firm measuring 1,704,380 gallons.

The largest manufacturing consumer was SIC Group 32, stone clay and glass products. Withdrawal for this group during the year measured 13,912,400 gallons, accounting for 18.37% of the total industrial/commercial flow and 81.63% of the entire manufacturing withdrawal. The three firms in this category used an average of 4.637,470 gallons per firm. The average daily demand was 0.038 MGD.

The second largest consumption by a manufacturing classification was by SIC Group 34, fabricated metal products. The three firms in this group consumed 2,089,170 gallons during the twelve month period. This represents 2.76% of the total industrial/commercial water use and 12.26% of the total manufacturing consumption. The average daily flow consumed by these firms was 0.006 MGD. The average consumption per firm was 686,390 gallons.

Non-Manufacturing

The non-manufacturing consumption reached 58,428,090 gallons, or 77.13% of the total industrial/commercial demand and 31.13% of the system's total withdrawal. The daily consumption by all non-manufacturing firms averaged 0.016 MGD. The annual consumption per firm, of which there were 39, averaged 1,498,160 gallons.

Under the non-manufacturing category, institutional interests consumed the largest volume of water. The withdrawal equalled 44,863,180 gallons, an average daily demand of 0.123 MGD. This gallonage represented 59.23% of the total industrial/commercial consumption and 76.78% of the total non-manufacturing consumption. The two establishments in this category consumed an average of 22,431,590 gallons each.

Other non-manufacturing classifications with significant water consumption were wholesale and retail trade firms and the service industries. These two groups had annual consumptions of 5,563,350 and 6,667,200 gallons, respectively.

TABLE 19
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
SMITHFIELD WATER SUPPLY BOARD
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	10	17,043,810	46,700	1,704,380	22.50
Paper & Allied Products (26)	1	114,930	320	114,930	0.15
Stone, Clay & Products (32)	3	13,912,400	38,120	4,637,470	18.37
Fabricated Metal Products (34)	3	2,089,170	5,720	686,390	2.76
Electrical Machinery, Electronics & Allied Industries (36)	1	311,360	850	311,360	0.41
Professional, Scientific and Controlling Instruments; Photographic & Optical Goods; Clocks & Watches (38)	2	615,950	1,690	307,980	0.81
Total Non-Manufacturing	39	58,428,090	160,080	1,498,160	77.13
Wholesale & Retail Trade	21	5,563,350	15,240	264,920	7.34
Services	6	6,667,200	18,270	1,111,200	8.80
Governmental	5	740,060	2,030	148,010	0.98
Institutional	2	44,863,180	122,910	22,431,590	59.23
Construction	3	500,260	1,370	166,750	0.66
Utilities	2	94,040	260	47,020	0.12
Miscellaneous Industries	1	278,000	760	278,000	0.37
Total	50	75,749,900	207,530	1,515,000	100.00

S. South Kingstown Water Department

System Description

The South Kingstown Water Department is a municipally owned and operated system. The system serves the southern shoreline area of South Kingstown, south of U.S. Route 1. Contained in this service area are the villages of Green Hill, Matunuck, and Snug Harbor. The system provides water to a largely residential, much of which is seasonal. The total withdrawal for the period July 1984-June 1985 amounted to 94,174,200 gallons. This represents an average daily flow of 0.26 MGD.

Industrial/Commercial Withdrawal

Through July 1, 1984 - June 30, 1985 the total industrial/commercial withdrawal from the South Kingstown system measured 6,838,940 gallons. This gallonage accounted for 7.26% of the system's entire flow. The daily withdrawal for industry averaged 0.019 MGD as compared to the 0.258 MGD demand for the entire system. The annual withdrawal per industrial/-commercial firm averaged 189,970 gallons.

Manufacturing

The total manufacturing consumption of water provided by the South Kingstown system measured 363,530 gallons. This figure was 5.32% of the total industrial/commercial flow and 0.39% of the system's total withdrawal. The average daily flow for the one manufacturing firm serviced by the system was 0.001 MGD.

Non-Manufacturing

The consumption by non-manufacturing interests during the year amounted to 6,475,410 gallons. This demand represented 94.68% of the total industrial/commercial usage and 6.88% of the system's consumption. The daily flow averaged 0.018 MGD. The annual flow per firm for the 35 non-manufacturing establishments serviced by this system averaged 185,010 gallons.

The largest non-manufacturing consumer was wholesale and retail trade firms. The flow for this classification amounted to 3,146,840 gallons. This withdrawal was 46.01% of the total industrial/commercial demand and 48.60% of the non-manufacturing consumption. The daily consumption averaged 0.009 MGD. The average annual consumption per firm by the 15 establishments in this category was 209,790 gallons.

The next largest non-manufacturing water user were firms in the service industries. This category includes any establishments which sell a service rather than a product. Examples are: theaters, banks, beauty parlors, and others. The flow for the service industries measured 2,511,010 gallons, accounting for 36.72% of the total industrial/commercial use and 38.78% of the non-manufacturing demand. The 15 establishments in this category had an average consumption of 167,400 gallons during the year.

TABLE 20
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
SOUTH KINGSTOWN WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	1	363,530	1,000	363,530	5.32
Transportation Equipment (37)	1	363,530	1,000	363,530	5.32
Total Non-Manufacturing	35	6,475,410	17,740	185,010	94.68
Wholesale & Retail Trade	15	3,146,840	8,620	209,790	46.01
Services	15	2,511,010	6,880	167,400	36.72
Governmental	5	817,560	2,240	163,510	11.95
Total	36	6,838,940	18,740	189,970	100.00

T. Stone Bridge Fire Department

System Description

The Stone Bridge water supply system is owned and operated by the Stone Bridge Fire District. The district was incorporated by enactment of the General Assembly in 1940. The system serves that part of Tiverton south of Carey Lane along Main Road and Highland road, 1500 feet east of Mount Hope Bay to Bulgarmarsh Road, then along Bulgarmarsh Road to Stafford Pond. In addition, the district sells water to North Tiverton Fire District and the Portsmouth Fire and Water District.

For the twelve month period June 1984 - May 1985, the withdrawal from the water supply system measured 79,902,150 gallons. This figure does not include water sold to the other two water supply systems. The corresponding average daily demand is 0.219 MGD.

Industrial/Commercial Withdrawal

The total withdrawal for industrial/commercial purposes was 9,516,970 gallons. This demand represented 11.91% of the entire demand for the system. The average consumption during the year for each of the 49 industrial/commercial establishments was 194,220 gallons. The average daily demand by these establishments was 0.026 MGD, only about 12% of the system's average daily demand.

Manufacturing

Only one manufacturing firm gets its water supply from the Stone Bridge water supply system. This firm is in SIC Group 34, fabricated metal products. Consumption for the year amounted to 111,710, a small average daily flow of less than 400 gallons. This firm was responsible for 1.17% of the total industrial/commercial demand.

Non-Manufacturing

The total withdrawal by non-manufacturing establishments was 9,405,260 gallons. The demand was 11.77% of the system's entire consumption and 98.83% of the total industrial/commercial consumption. This demand corresponds to a daily average flow of 0.026 MGD. The annual consumption per firm averaged 195,940 gallons. A total of 48 non-manufacturing establishments are serviced by the system.

The largest non-manufacturing consumption was by firms in wholesale and retail trade. For the twelve month period, these firms consumed 3,327,130 gallons. This amount represented 4.16% of the system's total withdrawal and 34.96% of industrial/commercial consumption. The average daily flow was 0.009 MGD. The 27 firms in this category had an average consumption per firm for the year of 123,230 gallons.

The second largest non-manufacturing consumer was governmental interests. The category includes all city, state, and federal buildings, which include all schools and military establishments. The consumption by the seven users in this category was 3,010,560 gallons. The average daily withdrawal was 0.008 MGD. The average annual consumption per firm was 430,080 gallons. The other two non-manufacturing categories with establishments receiving their water supply from the Stone Bridge system were the service industries and institutional entities.

TABLE 21
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
STONEBRIDGE FIRE DISTRICT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	1	111,710	310	111,710	1.17
Fabricated Metal Products (34)	1	111,710	310	111,710	1.17
Total Non-manufacturing	48	9,405,260	25,770.	195,940	98.83
Wholesale & Retail Trade	27	3,327,130	9,120	123,230	34.96
Services	10	2,774,360	7,600	277,440	29.15
Government	7	3,010,560	8,250	430,080	31.63
Institutional	4	293,210	800	73,300	3.08
Total	49	9,516,970	26.070	194,220	100.00

U. Wakefield Water Company

System Description

The Wakefield Water Company is investor owned and privately operated by the General Works Division of International Utilities. The system serves the villages of Wakefield, Peacedale to the URI East Farm, Tuckertown and Narragansett; the Town of Narragansett from Scarborough Beach along Route 1-A to and including Bonnet Shores; from Bonnet Shores through a right-of-way to the vicinity of Ferry Road. From July 1984 to June 1985, the total water consumption was measured at 577,279,000 gallons. The daily withdrawal averaged 1.58 MGD.

Industrial/Commercial Withdrawal

Through July 84 - June 85, the Wakefield Water Company metered an industrial/commercial consumption of 143,442,400 gallons. This gallonaage represented 24.85% of the system's total metered consumption. The daily industrial/commercial consumption averaged 0.39 MGD, as compared to the 1.58 MGD demand for the entire system. The annual flow per industrial/commercial firm averaged 349,860 gallons. In all, 410 industrial/commercial establishments received their water supply from the Wakefield Water Company.

Manufacturing

Manufacturing consumption measured 20,015,800 gallons. This amount was 13.95% of the total industrial/commercial consumption and 3.47% of the system's total demand. The nine manufacturing firms had an average daily consumption of 0.055 MGD. The annual withdrawal per manufacturing firm averaged 2,223,980 gallons.

The manufacturing classification with the largest consumption was SIC Group 22, textile mill products. The withdrawal by the 2 firms in this group measured 17,019,200 gallons. This demand accounted for 11.86% of the total industrial/commercial consumption and 85.03% of the manufacturing withdrawal. The daily consumption averaged 0.047 MGD. The annual withdrawal per firm averaged 8,509,600 gallons.

Non-Manufacturing

Non-manufacturing withdrawal from the Wakefield Water Company amounted to 123,426,600 gallons. This flow was 86.05% of the total industrial/commercial consumption and 21.38% of the system's entire measured consumption. The daily flow averaged 0.338 MGD. The annual use by the 401 non-manufacturing firms involved in the calculations averaged 307,800 gallons per firm.

The largest non-manufacturing consumer was the wholesale and retail trade industries. The consumption by the 181 in this group measured 35,508,200 gallons, representing 24.75% of the total industrial/commercial demand and 28.77% of the non-manufacturing use. The daily consumption measured 0.097 MGD. For the 181 firms involved in the calculations, the average annual withdrawal per firm reached 196,180 gallons.

The second largest non-manufacturing consumer was the service industries. The consumption for this grouping measured 33,062,000 gallons, accounting for 23.05% of the total industrial/commercial demand and 26.79% of non-manufacturing use. The daily consumption averaged 0.091 MGD. The annual withdrawal for the 126 firms averaged 262,400 gallons per firm.

TABLE 22
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
WAKEFIELD WATER COMPANY
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Manufacturing	9	20,015,800	54,840	2,223,980	13.95
Food & Kindred Products (20)	4	2,624,000	7,190	656,000	1.83
Textile Mill Products (22)	2	17,019,200	46,630	8,509,600	11.86
Lumber & Wood Products (24) (Except Furniture)	1	16,500	50	16,500	0.01
Chemical & Allied Products (28)	1	315,700	860	315,700	0.22
Machinery (except Electrical) (35)	1	40,400	110	40,400	0.03
Non-Manufacturing	401	123,426,600	338,160	307,800	86.05
Wholesale & Retail Trade	181	35,508,200	97,280	196,180	24.75
Services	126	33,062,000	90,580	262,400	23.05
Governmental	53	27,895,300	76,430	526,330	19.45
Institutional	26	25,179,200	68,940	968,430	17.55
Utilities	7	816,300	2,240	116,610	0.57
Construction	3	83,000	230	27,670	0.06
Agricultural	5	882,600	2,420	176,520	0.62
Total	410	143,442,400	392,990	349,860	100.00

V. Warwick Water Department

System Description

The Warwick Water Department is a municipal system owned and operated by the City of Warwick. The system serves the area east of the Penn-Central Railroad from the city line, southerly to Greenwich Bay and west of the railroad from the city line southerly to include Hillsgrove, Pontiac, Greenwood, along East Avenue and Potowomut Neck through connection to Kent County Water Authority main in Post Road. From July 1, 1983 to June 30, 1984, withdrawal from the city of Warwick's water system measured 3,459.84 million gallons, a daily flow of 9.48 MGD.

Industrial/Commercial Withdrawal

The total industrial/commercial withdrawal from the city of Warwick's water supply system measured 428,794,730 gallons. This consumption represented only 12.39% of the system's entire demand. The daily industrial/commercial flow averaged 1.17 MGD and the annual withdrawal per firm was 337,370 gallons. A total of 1,271 establishments derive their water supply from the Warwick Water Department.

Manufacturing

The manufacturing withdrawal from the system measured 89,578,600 gallons. This represents 20.89% of the total industrial/commercial withdrawal and 2.59% of the system's entire demand. Ninety seven manufacturing firms were involved in the calculations. The daily flow for this group averaged 0.245 MGD and the annual consumption for each firm averaged 923,490 gallons.

The manufacturing group with the largest consumption was SIC Group 25, furniture and fixtures, with this group's annual withdrawal totaling 21,672,550 gallons. This represents 5.05% of the total industrial/commercial use and 24.19% of the total manufacturing consumption. One should note that this group consists of only one firm having an average daily consumption of 0.059 MGD.

The next largest consumers in the manufacturing category were as follows; 1) SIC Group 33, primary metal industries, with an annual consumption of 12,662,320 gallons, 2) SIC Group 20, food and kindred products, with an annual withdrawal of 12,322,450 gallons, and 3) SIC Group 34, fabricated metal products, with an annual use of 10,186,870 gallons.

Non-Manufacturing

One thousand one hundred and seventy four firms make up the non-manufacturing portion of the industrial/commercial annual water consumption. Non-manufacturing withdrawal was measured at 339,216,130 gallons, accounting for 79.11% of the total industrial/commercial withdrawal and 9.80% of the entire system's yearly flow. The daily non-manufacturing demand was about 0.93 MGD, with an average annual withdrawal per firm of 288,940 gallons.

The largest user group in this category was the wholesale and retail trade group with an annual consumption of 198,252,730 gallons, accounting for 46.23% of the total industrial/commercial withdrawal and 58.44% of the non-manufacturing demand. The 416 firms in this category had an average daily consumption of 0.543 MGD. The annual withdrawal per firm is 476,570 gallons.

From the records available it was impossible to determine the type of business located in many of the commercial buildings serviced by the Warwick Water Department. This accounts for the large number of miscellaneous firms in the breakdown of non-manufacturing consumption. The 512 firms in this category had a total consumption for the year of 63,465,370 gallons, a relatively small consumption when compared to the demand of the 416 known wholesale and retail establishments.

TABLE 23
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
WARWICK WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/Commercial Use
Total Manufacturing	97	89,578,600	245,420	923,490	20.89
Food & Kindred Products (20)	5	12,322,450	33,760	2,464,490	2.87
Textile Mill Products (22)	2	813,340	2,230	406,670	0.19
Lumber & Wood Products (24)	1	402,270	1,100	402,270	0.09
Furniture & Fixtures (25)	1	21,672,550	59,380	21,672,550	5.05
Paper & Allied Products (26)	4	4,223,480	11,570	1,055,870	0.98
Printing, Publishing & Allied Industries (27)	3	1,463,450	4,010	487,820	0.34
Chemicals & Allied Products (28)	3	2,282,820	6,254	760,940	0.53
Rubber & Plastic Products (30)	4	572,590	1,570	143,147	0.13
Leather & Leather Products (31)	1	716,810	1,960	716,810	0.17
Primary Metal Industries (33)	6	12,662,320	34,690	2,110,390	2.95
Fabricated Metal Products (34)	14	10,186,870	27,910	727,630	2.38
Machinery (Except Electrical) (35)	20	3,003,830	8,230	150,190	0.70
Electrical Machinery, Electronics & Allied Industries (36)	5	7,591,800	20,800	1,518,360	1.77
Transportation Equipment (37)	1	997,680	2,730	997,680	0.23
Professional, Scientific, & Controlling Instruments; Photographic and Optical Goods; Watches, Clocks (38)	3	947,820	2,600	315,940	0.22
Jewelry, Jewelry Findings Silverware & Related Items (39)	24	9,718,520	26,630	404,940	2.27

Total Non-Manufacturing	1,174	339,216,130	929,360	288,940	79.11
Wholesale & Retail Trade	416	198,252,730	543,160	476,570	46.23
Services	206	48,343,950	132,450	234,680	11.27
Governmental	15	10,613,970	29,080	707,600	2.48
Institutional	15	17,835,410	48,860	1,189,030	4.16
Construction	10	704,700	1,930	70,470	0.16
Miscellaneous Non-Manufacturing	512	63,465,370	173,890	123,960	14.80
Total	1,271	428,794,730	1,174,780	337,370	100.00

W. Westerly Water Department

System Description

The Westerly Water Department operates two separate systems, both owned by the town of Westerly. One serves Westerly, Watch Hill, Misquamicut, Weekpaug, and Shelter Harbor in the town of Westerly, and the Pawcatuck area in Stonington Connecticut. The second system serves the village of Bradford in Westerly. From July 1984 to June 1985, the entire system's withdrawal was 1,076,645,000 gallons. This represented a daily flow of 2.95 MGD.

Industrial/Commercial Withdrawal

A total consumption of 146,045,830 gallons was withdrawn from the town of Westerly Water Department for industrial/commercial purposes. This flow represented 13.56% of the system's entire demand. The daily industrial/commercial flow averaged 0.40 MGD, as compared to 2.95 MGD for the entire system. The annual withdrawal for the 237 establishments getting their water supply from the Westerly Water Department averaged 616,230 gallons per firm.

Manufacturing

The total manufacturing consumption measured 56,459,660 gallons. This accounted for 38.66% of the total industrial/commercial use and 5.24% of the entire system's withdrawal. The average daily derived by manufacturing firms was 0.155 MGD. The annual withdrawal per firm averaged 2,566,350 gallons.

The largest manufacturing consumer was SIC Group 36, electrical machinery, electronics, and allied industries. This industry consumed 23,192,600 gallons, accounting for 15.88% of the total industrial/commercial demand and 41.08% of the entire use by manufacturing firms. The average daily demand was 0.064 MGD. The three firms in this classification had an average annual consumption of 7,730,900 gallons per firm.

The second largest manufacturing consumer was SIC Group 22, textile mill products. The consumption by firms in this group measured 22,238,890 gallons. This withdrawal represented 15.23% of the total industrial/commercial demand and 39.39% of the manufacturing consumption. The average daily demand was 0.061 MGD. The average consumption for the six firms in this classification was 3,706,500 gallons per firm.

Other manufacturing classifications with substantial withdrawals from the Westerly system were SIC Group 27, printing, publishing and allied industries; SIC Group 20, food and kindred products; and SIC Group 39, jewelry, jewelry findings, silverware and related items.

Non-Manufacturing

The non-manufacturing withdrawal measured 86,860,090 gallons or 59.47% of the total industrial/commercial demand. The daily consumption averaged 0.238 MGD. The annual flow per firm for the 214 establishments in this category averaged 405,890 gallons.

The largest non-manufacturing water consumer was by firms in the service industries. The consumption by this group measured 32,487,000 gallons. This demand was 22.24% of the industrial/commercial consumption and 37.40% of all non-manufacturing use. The daily flow averaged 0.089 MGD. The average annual consumption per firm for the 51 firms in this group was 637,000 gallons.

The second largest consumption by a non-manufacturing classification was by firms involved in wholesale and retail trade. The 119 firms in this category had a total consumption of 30,349,360 gallons. This demand was 20.78% of the total industrial/commercial consumption. The daily demand by these firms averaged 0.083 MGD. Each firm consumed an average of 255,040 gallons.

Other non-manufacturing classifications with large demands are the governmental sector and institutional establishments. The consumption by these groups is approximately a third of the demand by the two largest user groups.

TABLE 24
INDUSTRIAL/COMMERCIAL WITHDRAWAL FROM WATER SUPPLY
WESTERLY WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	22	56,459,660	154,680	2,566,350	38.66
Food & Kindred Products (20)	2	1,686,200	4,620	843,100	1.15
Textile Mill Products (22)	6	22,238,890	60,930	3,706,480	15.23
Furniture & Fixtures (25)	1	4,860	-	4,860	-
Printing, Publishing & Allied Industries (27)	6	7,529,570	20,630	1,254,930	5.16
Stone, Clay & Glass Products (32)	1	83,030	230	83,030	0.06
Machinery (except electrical) (35)	2	93,120	260	46,560	0.06
Electrical Machinery, Electronics, & Allied Industries (36)	3	23,192,600	63,540	7,730,870	15.88
Jewelry, Jewelry Findings, Silver- ware and related items (39)	1	1,631,390	4,470	1,631,390	1.12
Total Non-Manufacturing	214	86,860,090	237,970	405,890	59.47
Wholesale & Retail Trade	119	30,349,360	83,150	255,040	20.78
Services	51	32,487,000	89,010	637,000	22.24
Governmental	29	10,614,800	29,080	366,030	7.27
Utilities	7	620,160	1,700	88,590	0.42
Institutional	8	12,788,770	35,040	1,598,600	8.76
Miscellaneous Industries	1	2,726,080	7,470	2,726,080	1.87
Total	237	146,045,830	400,130	616,230	100

X. Woonsocket Water Department

System Description

The Woonsocket Water Department is a municipal system owned and operated by the city of Woonsocket. The system serves the entire city of Woonsocket, 8.8 square miles; Union Village and abutting areas in North Smithfield; a small area in Cumberland adjacent to the city at Diamond Hill Road; and small areas in Bellingham and Blackstone, Massachusetts. The total withdrawal from the Woonsocket system for the period July 1, 1984 - June 30, 1985 was 1,614.62 million gallons. The average daily withdrawal was 4.42 MGD.

Industrial/Commercial Withdrawal

For the period July 1, 1984 - June 30, 1985 a total of 542,326,000 gallons were withdrawn from the Woonsocket water system for industrial/commercial purposes. This demand accounted for 33.59% of the entire system's withdrawal. The daily industrial/commercial withdrawal averaged 1.486 MGD. The annual withdrawal per firm for the 636 establishments withdrawing from the system averaged 852,720 gallons.

Manufacturing

Manufacturing interests withdrew a total of 345,268,100 gallons from the water supply system. The withdrawal represented 21.38% of the entire system's withdrawal and 63.66% of the total industrial/commercial consumption. Manufacturing firms consumed 0.946 MGD. The annual consumption per manufacturing firms averaged 5,568,840 gallons.

The manufacturing industry with the largest water consumption was SIC Group 22, textile mill products. This industrial/commercial group withdrew 231,861,900 gallons, accounting for 42.75% of the total industrial/commercial consumption and 67.15% of the entire manufacturing withdrawal. The daily withdrawal averaged 0.635 MGD. The annual consumption per firm averaged 12,203,260 gallons.

The second largest consumer was SIC Group 34, fabricated metal products (except ordinance, machinery and transportation equipment). The total consumption for this group measured 35,401,300 gallons, an average daily withdrawal of 0.097 MGD. This was 6.53% of the industrial/commercial demand and 10.25% of the total usage by manufacturing firms. The annual consumption per firm averaged 11,800,430 gallons.

Non-Manufacturing

For the same time period, non-manufacturing withdrawal from the Woonsocket system measured 182,415,700 gallons. This withdrawal was 11.30% of the entire system's withdrawal while the total non-manufacturing consumption represented 33.64% of the total industrial/commercial flow. The daily flow averaged 0.500 MGD.

The largest non-manufacturing demand by a classification was wholesale and retail trade establishments. Under this non-manufacturing grouping, 71,866,200 gallons were consumed by 405 firms, thereby accounting for 39.40% of the total non-manufacturing withdrawal. The average daily withdrawal by firms in this group was .197 MGD. The average annual withdrawal per firm was 177,450 gallons.

The second largest non-manufacturing consumer was institutional interests. This institutional consumption measured 61,411,500 gallons, equal to a daily demand averaging 0.168 MGD. This represented 11.33% of the total industrial/commercial consumption and 33.67% of the entire non-manufacturing demand. The 62 users consumed an average of 990,510 gallons per firm during the course of the year.

Miscellaneous

The miscellaneous industries within Woonsocket consumed 14,642,600 gallons or 2.70% of the industrial/commercial demand and 0.91% of the entire system's withdrawal. The daily consumption averaged 0.04 MGD. The annual demand for the 7 miscellaneous firms getting their water from the Woonsocket system averaged 2,091,800 gallons per firm.

TABLE 25
INDUSTRIAL/COMMERCIAL WITHDRAWAL FORM WATER SUPPLY
CITY OF WOONSOCKET WATER DEPARTMENT
(In Gallons)

Industrial Groupings (SIC)	No. Firms	Tot. Annual Withdrawal	Avg. Daily Withdrawal	Avg. Annual Withdrawal Per Firm	Percent of Total Industrial/ Commercial Use
Total Manufacturing	62	345,268,100	945,940	5,568,840	63.66
Food & Kindred Products (20)	4	31,731,200	86,930	7,932,800	5.85
Textile Mill Products (22)	19	231,861,900	635,240	12,203,260	42.75
Apparel and other Finished Products made from fabrics and similar materials (23)	3	1,297,800	3,560	432,600	0.24
Lumber & Wood Products (except furniture) (24)	2	103,200	280	51,800	0.02
Furniture & Fixtures (25)	1	59,800	160	59,800	0.01
Paper & Allied Products (26)	1	1,394,300	3,820	1,394,300	0.25
Printing, Publishing and Allied Industries (27)	4	6,450,000	17,670	1,612,500	1.19
Chemical & Allied Products (28)	3	4,371,300	11,980	1,457,100	0.81
Rubber & Plastic Products (30)	3	7,160,600	19,620	2,386,870	1.32
Leather & Leather Products (31)	2	858,000	2,350	429,000	0.16
Stone, Clay & Glass Products (32)	1	156,400	430	156,400	0.03
Primary Metal Industries	3	2,881,300	7,890	960,430	0.53
Fabricated Metal Products (Except ordinance, machinery and transportation equip.) (34)	3	35,401,300	96,990	11,800,430	6.53
Machinery (except electrical) (35)	3	425,600	1,170	141,870	0.08
Electrical Machinery, Electronics and Allied Industries (36)	1	3,360,800	9,210	3,360,800	0.62
Transportation Equipment (37)	2	9,876,600	27,060	4,938,300	1.82
Professional, Scientific, &	1	6,821,800	18,690	6,821,800	1.26

Controlling, Instruments; Photo-graphic and Optical Goods; Watches and Clocks (38)					
Jewelry, Jewelry Findings, Silver-ware and related items (39)	6	1,056,200	2,890	176,030	0.19

Total Non-Manufacturing	567	182,415,700	499,770	321,720	33.64
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Wholesale & Retail Trade	405	71,866,200	196,890	177,450	13.25
Services	75	28,648,500	78,490	381,980	5.28
Institutional	62	61,411,500	168,250	990,510	11.33
Governmental	25	20,489,500	56,140	819,580	3.78

Miscellaneous Industries	7	14,642,600	40,120	2,091,800	2.70
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Total	636	542,326,400	1,485,830	852,720	100
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